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1995-3054

14B

Stormwater Management Plan

for:

Lot 2, Block 1, The Village on the Park Subdivision, Filing
No. 3

2406 South Parker Road

Aurora, CO 80231

Owner/Operator(s):

South Parker Parcel, LLC c/o Kimco Realty Corp.

Todd Dewell

15 Southgate Avenue Suite 201

Daly City, CA 94015

Engineer Contact(s):

Entitlement & Engineering Solutions, Inc.

Brett Schlanger, P.E.

518 17th Street, Suite 1575

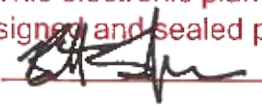
Denver, CO 80202

(303) 572-7997

brett.schlanger@ees.us.com

FACSIMILE

This electronic plan is a facsimile of the
signed and sealed pdf set

 Date 4-19-18

BRETT SCHLANGER

SWMP Preparation Date: 04/19/2018

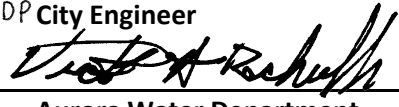
Estimated Project Dates:

Project Start Date: TBD - est. 04/26/18

Project Completion Date: TBD - est. 11/01/18

APPROVED FOR ONE YEAR FROM THIS DATE

4/30/2018

APPROVED FOR ONE YEAR FROM THIS DATE	
4/30/2018	
CDP City Engineer 	Date 04/27/2018
Aurora Water Department 	Date 04/26/2018

“THIS STORMWATER MANAGEMENT PLAN HAS BEEN PLACED IN THE CITY OF AURORA FILE FOR THIS PROJECT AND HAS BEEN DETERMINED TO COMPLY WITH THE APPLICABLE CITY OF AURORA STORMWATER MANAGEMENT CRITERIA. ADDITIONAL STORMWATER MANAGEMENT, EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED OF THE OWNER OR HIS/HER AGENTS, DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT FUNCTION AS INTENDED.”

“REVIEW OF THIS PLAN BY THE CITY OF AURORA SHALL NOT IMPLY THAT IT HAS BEEN REVIEWED FOR COMPLIANCE WITH THE REQUIREMENTS SET FORTH BY THE STATE OF COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY.”

“SEE APPROVED STORMWATER MANAGEMENT PLAN DESIGN DRAWINGS (SITE PLAN) FOR SITE SPECIFIC BEST MANAGEMENT PRACTICES.”

Project Owner/Developer Signature Block

I have reviewed the information contained within the Stormwater Management Plan and accept responsibility for the requirements set forth.

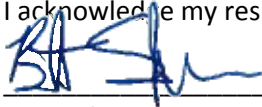


Permittee/Affiliation
Contact: Todd Dewell
Kimco Realty - Owner

04.16.18
Date

Plan Preparer Signature Block

I acknowledge my responsibility for the preparation of the Stormwater Management Plan.



CO Professional Engineer
Brett Schlanger, P.E., LEED AP
Entitlement & Engineering Solutions, Inc.

4-19-18
Date

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"Pursuant to Sections 138-440 and 138-442 of the Aurora Municipal Code, the Permittee shall locate, install, and maintain all Best Management Practices, including, but not limited to, erosion controls, sediment controls, drainage controls, and water quality BMPs as indicated in the approved Stormwater Management Plan (SWMP). The following notes are a requirement and shall be included in the SWMP narrative developed for this project and submitted for approval by the City. BMP installations shall be installed per the COA Standard Detail in effect at the time of installation or per the approved SWMP design drawing, a COA approved variance, or a COA approved design drawing plan amendment."

COA Stormwater Management Standard Notes

1. A City of Aurora Stormwater Quality Discharge Permit for Construction Activities must be issued by the City and executed by a COA Erosion Control staff prior to any earthwork activities. An on-site inspection will be conducted to verify the correct installation and adequacy of initial BMPs for the site. No earthwork, including clearing and grubbing, or demolition activities are to begin until the project site has passed an inspection and the City of Aurora Stormwater Quality Discharge Permit for Construction Activities has been executed. The Permittee is required to present the project's CDPHE-WQCD Stormwater Discharges Associated with Construction Activity Permit to the Inspector during the initial inspection. The Permittee shall designate a Stormwater Management Plan (SWMP) Administrator on the application for the City of Aurora Stormwater Quality Discharge Permit for Construction Activities. The SWMP Administrator will act as the project representative for any concerns or issues regarding environmental controls and stormwater management.
2. These requirements shall be the obligation of the Permittee, until such time as the Permit is properly closed, or otherwise allowed by the City to be voided, modified, transferred, re-assigned or replaced.
3. This SWMP narrative, the SWMP design drawings, and the Permittee's inspection and maintenance records are all components of required record keeping and shall be kept on site at all times and updated as required. These and any other pertinent records shall be provided to the City when requested.
4. Any discrepancy between this SWMP and any other approved Stormwater Management Plan for this site shall require compliance with the more restrictive valid, approved plan.
5. Streets shall be constructed with Rough Cut Street Control measures, surface roughened or otherwise temporarily stabilized with rough cut street controls within seven (7) days of completion of grading in the appropriate phase. If paving is to occur within fourteen (14) days after final grading, rough cut street controls shall be waived.
6. Inspection and maintenance of erosion and sediment control Best Management Practices (BMPs) are the continuous obligations of the Permittee. BMPs shall be inspected at a minimum every seven (7) days and within 24-hours after the end of a precipitation event that produces run-off, and following snowmelt events. If a site is temporarily idle and no construction activities will occur during the 48 hours following a storm event, the post-precipitation event (including

snowmelt) inspection shall be conducted prior to commencing construction activities on the site, but no later than 72 hours following the storm event. All necessary maintenance and repairs shall be initiated and completed on an on-going basis, as features are required to operate continuously. Inspections may need to be conducted at a greater frequency than noted above, to ensure features and systems are operating adequately. Erosion and sediment control BMPs shall be maintained and functional for the entire duration of the project.

7. Ingress and egress vehicle access points onto disturbed areas shall be stabilized with Vehicle Tracking Control Pads (VTC) and shall be constructed with angular rock, 3" to 6" in size and to a depth of at least 9-inches. The use of recycled asphalt or concrete is not permitted. The VTC shall be installed over a liner of non-woven geotextile with a weight of at least 10 oz/yd² and a grab tensile strength of at least 250 pounds. No dirt or other materials shall be placed on paved surfaces or curb flow lines to act as curb ramps. Only metal ramps or rock wattles may be used in the curb flow line.

8. Fugitive dust emissions resulting from grading activities and/or wind shall be controlled using reasonably available control technology as defined by the Colorado Department of Public Health and Environment.

9. All potential pollution sources on-site shall be identified and control measures installed and practiced to minimize the likelihood of a release. Spill prevention controls shall be developed for the site with BMPs in place to respond to any spills, leaks or other releases.

10. Hydraulic mulching as a means to cover and protect seeding is not an acceptable means of applying mulch in the City of Aurora unless a previously installed irrigation system is used to aid germination and growth and where approved through variance. Hydraulic seeding is not permitted.

11. For all porous landscape detention facilities, in order to prevent clogging of filter medium, installation of the filtration system must be delayed until after the site is fully landscaped.

12. If stockpiles are located within 100 feet of a drainageway or a public storm sewer system, additional sediment controls such as temporary diversion dikes, silt fence, or sediment basin shall be required.

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SECTION 1 SITE DESCRIPTION

In this section, the preparer can gather some basic site information that will be helpful to the permittee later when you file for permit coverage.

- For more information, see *City of Aurora Rules and Regulations Regarding Stormwater Discharges Associated with Construction Activities, current revision* (also known as the *Rules and Regs*), Chapter 2
- Detailed information on determining your site's latitude and longitude can be found at www.epa.gov/npdes/stormwater/latlong

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Site Location

- Site location including, Section, township, range, and latitude/longitude to the nearest 15 seconds.
- Project street location or nearest major cross streets
- If applicable, specific acknowledgement that the land is currently, or will ultimately be owned or managed by the Parks, Recreation and Open Space Department.

Project/Site Name: <u>Lot 2, Block 1, The Village on the Park Subdivision, Filing No. 3</u>	
Project Street/Location: <u>2406 S. Parker Road</u>	
City: <u>Aurora</u>	State: <u>CO</u> ZIP Code: <u>80231</u>
County or Similar Subdivision: <u>Arapahoe</u>	
Latitude/Longitude (Use one of three possible formats, and specify method)	
Latitude:	Longitude:
1. <u>39° 40' 32"</u> N (degrees, minutes, seconds)	1. <u>104° 52' 05"</u> W (degrees, minutes, seconds)
2. <u> </u> ° <u> </u> ' N (degrees, minutes, decimal)	2. <u> </u> ° <u> </u> ' W (degrees, minutes, decimal)
3. <u> </u> ° N (decimal)	3. <u> </u> ° W (decimal)
Method for determining latitude/longitude:	
☐ USGS topographic map (specify scale: <u> </u>)	☐ EPA Web site ☐ GPS
☒ Other (please specify): <u>Google Earth</u>	

Is this land currently or will it ultimately be owned or managed by COA Parks, Recreation, and Open Space Department? ☐ Yes ☒ No

CDPS Permit #*:

COA SWQ Permit #*:

*(This is the unique identifying number assigned to your project by your permitting authority after you have applied for coverage under the appropriate construction permit.)

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Description of Adjacent Areas

- Provide a description of adjacent areas such as residential areas, roads, streams, lakes, etc, which might be affected by the proposed project's land disturbing activity.

Provide adjacent area information

The proposed development of a three tenant structure with commercial retail and/or restaurant uses and associated infrastructure (site) is located at the northeast corner of South Parker Road and East Harvard Avenue, more specifically situated in the SE ¼ of Section 27, Township 4 South, Range 67 West of the 6th Principal Meridian. The triangular shaped parcel site is bound to the southwest by South Parker Road, to the southeast by East Harvard Avenue, and to the north by additional Village on the Park retail, most closely an existing T.J. Maxx. The title of the site plan and construction documents are under the plat name, Lot 2, Block 1, The Village on the Park Subdivision, Filing No. 3.

a) Nature and Purpose of Construction Activity

Describe of the nature and purpose of the construction activity, note any vertical construction.

The proposed commercial development is a single parcel, 1.19 acres, with 0.87 acres to be disturbed with this project. The proposed infrastructure and site improvements are located in the southern portion of the site, with staging and other erosion control features existing on the undisturbed northern portion of the property. The existing curb cut on South Parker Road will remain, while a proposed curb will connect the eastern portion of the site with East Harvard Avenue. The commercial development will also include the construction of a common access drive north of the proposed structure, as well as a detention pond that will serve the parcel. This pond will be discussed in greater detail in later sections within this report.

The site currently serves as a restaurant with associated hardscape and perimeter landscaping. The existing topography across the northern portion of the site slopes eastward north of the existing structure, and southward in the southern portion of the site south of the existing structure. Slopes generally range from 1-percent to 3-percent, and range as high as 3:1 and 4:1 slopes at the site perimeter adjacent to existing roadways. The vertical elevation difference across the site from south to north is approximately 7 feet.

☐ Residential ☒ Commercial ☐ Industrial ☐ Road Construction ☒ Linear
☐ Utility ☒ Overlot Grading ☒ Over-excavation ☒ Vertical Construction
☐ Other (please specify):

b) Construction Sequence

The proposed sequence for major activities should be described, including:

- An estimated project start
- An estimated project end date
- The sequence of major construction activities (Initial, interim, final or overlot grading, utilities, vertical, paving, over – excavation, etc.). This is expected to be a brief overview of the project as more detailed phasing information and specific BMPs will be addressed in later sections of the SWMP narrative report.

Estimated Project Start Date: TBD - est. 05/01/2018

Estimated Project Completion Date: TBD - est. 11/01/2018

Describe the major phases of construction:

Phase 1: Site Work

This includes land clearing, grading, utility installation, installation of curb and gutter, sidewalks, pavement, utilities, landscaping and hardscaping.

Phase 2: Building Construction

This includes underground utilities servicing the building, foundation, structure and roofing construction, MEP, doors and windows, exterior façade and moisture control systems, interior finishes, and building certifications.

c) Area

The areas for the site should be described including any grading phasing which will need all of the information by phase, as well as for the overall project. This also includes overlot grading in different phases to achieve the outcome of the project. This may be required to be modified by the contractor with a phasing plan submittal.

- Provide estimates of the total area of the site and the sub area within the site expected to undergo clearing, excavation or grading.
- Include an estimate of the excavation and fill volumes involved during the proposed construction.
- Include an estimate of how excavation and fill will be phased.
- Include an estimate of over-excavation areas and volumes (and type) and an estimate of offsite trucking volume (import and/or export).

Note: If exporting material to an area within the COA limits, the receiving site must have its own SWMP and may be required to have its own COA Stormwater Quality Discharge Permit. If the export site is outside of COA limits, then the requirements of that local jurisdiction must be met and proof of a valid permit for the site will be required.

Total project area:	1.19	acres	
Construction site area to be disturbed:	0.87	acres	
Construction site over excavation area to be disturbed:	0.00	acres	
Export/Import Volume			
Phase Area	Cut/Fill	Net	
	535 CY/90 CY	445 CY (CUT)	
Contractor is responsible to confirm if export is brought to an area within COA limits, the receiving site must have it's own SWMP. See note above table.			

Description of phasing for sites disturbing more than 40 acres.:

N/A

d) Topography, Soils, and Rainfall Data

- Provide a summary describing the soil, the soil type, and hydrologic soil group, permeability, texture, soil erosion potential, depth, soil structure, etc. and potential impacts of the soil type on the quality of any stormwater discharge from the site.
- A description of the topography of the site, existing site conditions, drainage patterns, and existing site slopes should also be included.

Note: A soils map showing the site limits and excerpts regarding the soils information shall be placed in the SWMP narrative report appendices.

Soil type(s):

The Natural Resources Conservation Service (NRCS) defines the existing soils across the site as Truckton Loamy Sand, 1-percent to 5-percent (TrC). The properties and qualities of TrC describe such soils as well draining and categorized as Hydrologic Soil Group A.

Description	Result	Location of Occurrence
Highest Elevation:	5570.00	Northwest portion of site, and central portion at FFE of bldg
Lowest Elevation:	5559.94	Lowest point of trickle channel in pond
Steepest Slope:	3:1	Landscape areas and detention pond
Average Slope:	2.0%	Throughout paved portion of site
Average Elevation:	5569.00	Throughout site

Slopes (describe current slopes and note any changes due to grading or fill activities):

The existing topography across the northern portion of the site slopes eastward north of the existing structure, and southward in the southern portion of the site south of the existing structure. Slopes generally range from 1-percent to 3-percent, and range as high as 3:1 and 4:1 slopes at the site perimeter adjacent to existing roadways. The vertical elevation difference across the site from south to north is approximately 7 feet.

Drainage Patterns (describe current drainage patterns and note any changes due to grading or fill activities):

The existing stormwater flows north of the existing building flow across the parking lot in an eastward direction. The existing flows south of the existing building, flow southward across landscaping south of the building. There is a portion of the existing site that flows in a southwestern direction off-site to Park Road.. The majority of on-site existing flows are directed to an existing inlet southeast of the site in East Harvard Avenue.

Proposed storm flows continue is similar patterns. Flows north of the proposed building continue to flow eastward and sheet flow to the existing inlet. The majority proposed flows south of the the proposed building, as well as the roof drainage, are directed to the proposed detention pond. The outlet pipe for the pond is proposed to connect to the existing inlet. The remaining flows in the southwest continue off-site to South Parker Road as before.

Curb and gutter along adjacent roadways, as well as the perimeter slopes prevent off-site flows from reaching the site.

Normal Monthly Precipitation Table in Inches

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0.51	0.49	1.28	1.93	2.32	1.56	2.16	1.82	1.14	0.99	0.98	0.63

Adapted from: <http://www.ncdc.noaa.gov/oa/climate/online/ccd/nrmlprcp.html>

Imperviousness and Runoff Coefficients:

- Calculate the percentage of impervious surface area before and after construction
- Calculate the runoff coefficients before and after construction.

Percentage impervious area before construction:		68	%
Runoff coefficient before construction (100 Yr):		0.69	
Percentage impervious area after construction:		66	%
Runoff coefficient after construction (100 Yr):		0.67	

e) Existing Vegetation

- Provide a description of the existing vegetation at the site and an estimate of the percent vegetative cover density prior to disturbance in an average square yard of the site. This requirement does not encompass hard surfaces or damaged areas. The consultant may have to evaluate vegetation from a nearby area if there has already been disturbance. There may also be drastically different vegetation in areas of the project or prairie dog issues, discuss as appropriate.
- A plan showing the existing major trees (4" diameter trunks and larger), tree masses, and shrub masses should be provided.

Existing Vegetation on the site:

The existing site serves as a similar use and site layout as proposed; and proposed landscape coverage will similarly represent the existing conditions.

Pre-disturbance vegetation density:

24%

Discuss tree protections and removals (reference detail for protection):

Efforts were taken in site layout and planning to maintain as many existing trees as possible. Seven trees within the limits of disturbance will be maintained, while eight trees will be removed. All of the existing trees on-site trees to remain will follow tree protection details per Details 1 and 2 of the Landscape Plan, sheet P5 of the Site Plan documents.

f) Potential Sources of Pollution

- Identify and list the proposed location and description of any potential pollution sources anticipated to be used during the project, such as portable toilets, vehicle fueling, grout/cement mixers, storage of fertilizers, paints or chemicals and stockpiles, etc.
- Materials of concern may include, but are not limited to, raw materials, fuels, metallic products, hazardous substances designated under Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), any chemical the facility is required to report pursuant to Section 313 of title III of the Superfund Amendments and Reauthorization Act (SARA), fertilizers, pesticides, ash, slag, sludge concrete washout, paints, solvents, and waste piles.

Note: This is expected to be a brief list with detailed information being addressed in later sections of the SWMP narrative report.

Potential pollutants and sources to stormwater runoff:

The potential pollutant sources for this site and construction are typical for the construction of a one story commercial development. Paints/chemicals/solvents, etc. for building construction, portable toilets, general waste, small soil stockpiles, construction materials, cement mixers, sawcut waters, concrete washout waste, and minimal amounts of fuel. Material storage is anticipated inside the building.

<i>Trade Name, Material, or Operation</i>	<i>Stormwater Pollutants</i>	<i>Potential Location</i>
Bedding Stockpiles	Sediment	Entire site
Boring Operations, Concrete Cutting Operations or Other Operations that use Water	Sediment, slurry, concrete fines, processed water, etc	Bore sites, site perimeters, pothole locations, etc
Carpentry and Framing	wood, solvents, stains, debris	Building Construction
Concrete Materials and Concrete Waste Management	Concrete	Entire site
Concrete Curing	Curing Compound	Areas of Concrete Construction
Demolition and Debris Disposal	Trash, Sediment, various other contaminants	Existing Building Areas
Dewatering and Poned Water Management	Ground Water and Poned Water containing various other pollutants	Entire site
Form Oil and Concrete Forms	Form Oil	Building Construction
Generators	Oil, Gasoline, etc	Entire site

<i>Trade Name, Material, or Operation</i>	<i>Stormwater Pollutants</i>	<i>Potential Location</i>
Grading Operations (clearing, excavating, etc)	Sediment	Entire Site
Hazardous Wastes	Fire Retardant, Acid Wash, Graffiti Prevention Liquid, Processed Water	Building Construction
HVAC	Debris, Glue, etc	Building Construction
Insulation	Fiberglass, other debris	Building Construction
Landscape Products	Fertilizers, Herbicides, pesticides, fungicides, etc.	Entire site
Masonry	Cement, Grout, Masonry Mixers, Sand Stockpiles, etc	Building Construction
Material Delivery	Other Materials	Entire site
Painters	Paint, Primers, Stains, Glue	Building Construction
Paving Operations	Asphalt, Tar, Road Base, Lime	Roadways and Parking areas
Plumbing	Trash, Glue, Solder	Building Construction
Processed Water	Any number of chemicals or other toxins	Entire site
Roofing	Asphalt, Wood, Concrete	Building Construction
Sanitary Waste Management	Sanitary Waste	Building Construction and Staging Areas
Soil Stockpiling	Sediment	Entire site
Stabilized Staging/Haul Routes	Sediment, Fuel, Oil	Entire site
Stucco, Plastering, Drywalling	Drywall, Plaster, Tool Cleaning, etc	Building Construction
Trash	Debris, Bacteria, various chemicals, etc.	Building Construction and Staging Areas
Utility Excavations	Sediment, Fuel, Oil	Entire site
Vehicle and Equipment Maintenance, Cleaning, or Leaks	Fuel, Oil, Grease, Chemicals, Hydraulic Oil	Entire site

g) Non Stormwater Discharges

Identify and list the location and description of any anticipated non-stormwater components of the discharge, such as springs (State permit required), potable water for dust suppression, landscape irrigation return flow, pipeline dewatering (i.e. waterline flushing and testing) diverted stream flows, flows from wetlands, firefighting activities, hydrant blow-offs, building power-washing where detergents are not used, construction dewatering of groundwater (State permit required), uncontaminated air conditioning or compressor condensate, foundation or footing drains where flows are not contaminated with process materials such as solvents (State permit

may be required), or other discharges specifically authorized by a separate National Pollutant Discharge Elimination Systems (NPDES) permit or a separate Colorado Discharge Permit System (CDPS) permit etc. Discharges are those flows that are allowed to leave the site.

- Identify all allowable sources of non-stormwater discharges that are not identified. The allowable non-stormwater discharges identified might include those in the table below.
- Identify measures used to eliminate or reduce these discharges and the BMPs used to prevent those discharges from becoming contaminated.

Check if Applicable to Site	List of Potential Non-Stormwater Discharges	Management of Discharge
X	Waters used to wash vehicles where detergents are not used	On rare occasions workers, may wash the tires of their vehicles manually with a bucket and sponge. This activity will occur on a stabilized staging area, vehicle tracking pad, or any other area covered with gravel (will not occur on impervious surfaces). Given that a minimal amount of water will be used during this process, all runoff will seep into the gravel where the activity occurs.
X	Water used to control dust	Water will only be sprayed on pervious surfaces to allow infiltration and will not be sprayed in amounts so as to cause erosion and will be contained by utilizing existing perimeter control BMPs such as earthen berms, sediment control log, or silt fence.
X	Potable water including uncontaminated water line flushings	Uncontaminated water line flushings will occur at site and will have BMPs in place before this operation occurs. BMPs required for water line flushing include erosion control BMPs to handle the concentrated flows such as check dams and rock socks. Downstream BMPs will also include perimeter controls such as earthen berms, sediment control

Check if Applicable to Site	List of Potential Non-Stormwater Discharges	Management of Discharge
		log, and silt fence.
X	Routine external building wash down that does not use detergents	Once construction is completed, the external building may be washed down with clean water. Downstream BMPs such as inlet protection and check dams will prevent the water from carrying sediment into ditch or storm system.
☐	Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used	
☐	Uncontaminated air conditioning or compressor condensate	
☐	Uncontaminated ground water or spring water	
☐	Foundation or footing drains where flows are not contaminated with process materials such as solvents	
☐	Uncontaminated excavation dewatering	The source will be identified and located in the SWMP, BMPs will be implemented to prevent erosion.
X	Landscape irrigation	Downstream slopes will either be stabilized or erosion control measures such as surface roughening, temporary seed/mulch, or erosion control blanket will be utilized to manage run-on caused by irrigation flows. Diversion ditches may also be used to divert the flow around the construction site.
X	Potable water for firefighting activities	If firefighting activities were to occur adequate sediment controls will be implemented as practical. BMPs that may be used to control any runoff from firefighting activities include rock socks, check dams, curb socks, and inlet protection.

Check if Applicable to Site	List of Potential Non-Stormwater Discharges	Management of Discharge
☐	Diverted channels or streams	
☐	Flows from wetlands	
X	Sanitary sewer/plumbing line testing	Sanitary sewer/plumbing line testing will occur at site and will have BMPs in place before this operation occurs. BMPs required for sanitary sewer/plumbing line testing include erosion control BMPs to handle the concentrated flows such as rock socks. Downstream BMPs will also include perimeter controls such as, sediment control log, and silt fence.
☐		

h) Receiving Waters

List the name of all potential receiving water (s) and the size, type and location of any outfall. If the discharge is to a municipal storm sewer system, then provide the name of that system, the location of the storm sewer discharge, and the ultimate receiving water(s). State whether or not there are wetlands, the 100-year floodplain status (i.e. if the site is within a floodway, near a flood plain or not within a flood zone), if the receiving water is impaired or not, and if there are any stream crossings proposed.

Note: Floodplain maps shall be provided in the SWMP narrative report appendices and shall show the site in relation to the floodplain.

- List the waterbody(s) that would receive stormwater from your site, including streams, rivers, lakes, and wetlands. Describe each as clearly as possible, such as *Murphy Creek, a tributary to the Sand Creek*, and so on. Indicate the location of all waters, including wetlands, on the site map.
- Note any stream crossings or stream diversions, if applicable.
- List the downstream storm inlets, storm sewer system or drainage system that stormwater from your site could discharge to and the waterbody(s) that it ultimately discharges to. It is preferred that the waterbodies are listed to a reservoir, Sand Creek, Cherry Creek or the South Platte.
- If any of the waterbodies above are impaired and/or subject to Total Maximum Daily Loads (TMDLs), please list the pollutants causing the impairment and any specific requirements in the TMDL(s) that are

applicable to construction sites. Your SWMP should specifically include measures to prevent the discharge of these pollutants.

The site is within the Cherry Creek Drainage Basin: ☒ Yes ☐ No

The site is within the Aurora Reservoir Drainage Basin: ☐ Yes ☒ No

Description of receiving waters:

The proposed site lies within the Cherry Creek Basin. Runoff from the site is ultimately conveyed southwest to the Babi Yar Tributary via existing infrastructure under South Parker Road. The Babi Yar Tributary ultimately terminates downstream at the Cherry Creek South Platte River.

Description of storm inlets and storm sewer systems:

Runoff within the parking lot generally sheet flows eastward towards East Harvard Avenue curb and gutter where it is conveyed to an existing curb inlet. Runoff from roof drainage and south of the proposed building will be directed to a detention pond and then conveyed to the existing curb inlet.

Description of impaired waters or waters subject to TMDLs:

N/A

100- Year Floodplain Status:

- Review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panel 236 of 300, Map Number 0800460236G, Map Revised November 17, 2005, indicates the area to the west of the proposed site is located in Zone X defined as an area determined to be outside the 0.2% annual chance floodplain.

Description of wetlands:

N/A

Other: N/A

i) Site Features and Sensitive Areas to be Protected

- Describe unique site features including streams, stream buffers, wetlands, specimen trees, natural vegetation, steep slopes, or highly erodible soils that are to be preserved.
- Describe measures to protect these features.
- Include these features and areas on your SWMP design drawings.

N/A

j) Other Applicable Federal, State or Local Programs, Regulations or Restrictions

State any other regulations that are affecting the site (i.e. **State CDPHE**, Regulation 72, Consent Decrees, etc).

Due to the limits of disturbance being under 1.00 acre, s the Colorado Department of Health and Environment (CDPHE) Colorado Discharge Permit (CDPS) permits are not required.

Activities requiring additional permitting:

- Construction dewatering to surface waters or as surface runoff.

1) Endangered Species Certification

State whether or not there are any endangered species or critical habitats on or near the site. If so, then describe the impacts and the measures being taken to address that impact and supply documentation in the SWMP narrative report appendices.

Are endangered or threatened species and critical habitats on or near the project area?

☐ Yes ☒ No

If yes, describe the species and/or critical habitat and provide reference to other documents as appropriate:

N/A

2) Historic Preservation

State whether or not there are any historic sites on or near the site. If so, then describe the impacts and the BMP measures being taken to address that impact

Are there any historic sites on or near the construction site?

☐ Yes ☒ No

If yes, describe or refer to documentation that determines the likelihood of an impact on this historic site and the steps taken to address that impact.

N/A

SECTION 2 DESIGN DRAWINGS

Approved design drawings shall be kept with the approved narrative report (this document) in the field and must be kept current. See COA Rules and Regs Chapter 3 for more information regarding Living Documents. For most projects, a series of site maps is recommended. The first should show the undeveloped site and its current features. An additional map or maps should be created to show the developed site or for more complicated sites show the major phases of development.

- SWMP design drawings are required to indicate the types, locations, and extents of BMPs proposed for installation on the project site.
- For more information and requirements, see *Rules and Regulations Regarding Stormwater Discharges Associated with Construction Activities, current revision* (also known as the *Rules and Regs*), Chapter 2

SECTION 3 STORMWATER MANAGEMENT CONTROLS

This section shall describe the stormwater management controls that will be used to control pollutants in stormwater discharge during construction activity.

a) SWMP Administrator and Important Contacts

- List Contact names and phone numbers for the SWMP Administrator, alternates, owner, developer, etc that are known
- Copy as needed

Owner/Operator(s):
Kimco Realty
Todd Dewell
15 Southgate Avenue, Suite 201
Daly City, CA 94015
650-746-7503
tdewell@kimcorealty.com
Area of Control (if more than 1 operator at site):

Project Manager(s) or Site Supervisor(s):
Company or Organization Name: General Contractor TBD
Name:
Address:
City, State, Zip Code:
Telephone Number:
Fax/Email:
Area of Control (if more than 1 operator at site): n/a

SWMP Administrator Contact(s):
Company or Organization Name: TBD
Name: TBD
Address:
City, State, Zip Code:
Telephone Number:
Fax/Email:
Area of Control (if more than 1 operator at site):

This SWMP was Prepared by (the Colorado Licensed Engineer):
Entitlement and Engineering Solutions, Inc.
Brett Schlanger
518 17 th Street
Denver, CO 80202
303-572-7997
Brett.schlanger@ees.us.com

Emergency 24-Hour Contact (for site, not 911):
Company or Organization Name: TBD
Name: TBD
Address:
City, State, Zip Code:
Telephone Number:
Fax/Email:
Area of Control (if more than 1 operator at site):

Subcontractor(s):
Company or Organization Name:
Name:
Address:
City, State, Zip Code:
Telephone Number:
Fax/Email:
Area of Control (if more than 1 operator at site):

Other:
Company or Organization Name:
Name:
Address:
City, State, Zip Code:
Telephone Number:
Fax/Email:
Area of Control (if more than 1 operator at site):

Other:
Company or Organization Name:
Name:
Address:
City, State, Zip Code:
Telephone Number:
Fax/Email:

Area of Control (if more than 1 operator at site):

b) Identification of Potential Pollutant Sources

All potential pollutant sources, including materials and activities, at a site must be evaluated for the potential to contribute pollutants to stormwater discharges.

- Identify and describe the sources of potential pollutants to stormwater discharges. At a minimum, each of the following sources and activities shall be evaluated for the potential to contribute pollutants to stormwater discharges.
- Numbers in [] brackets indicate the appropriate section to describe the BMPs to be used to address the potential pollutant source

Applicable to Site (Y, N, Maybe)	Sources of Potential Pollutants to Stormwater Discharges
Y	All disturbed and stored soils (including borrow areas, stockpiles, haul routes, and over-excavation) [Section 3 c) 1, 2, and 3]
Y	Vehicle tracking controls and clean up [Section 3 c) 6]
N	Management of contaminated soils [Section 3 c) 4]
Y	Loading and unloading operations (including access points and protection of existing BMPs) [Section 3 c) 10]
Y	Outdoor storage areas (building materials, fertilizers, chemicals, etc.) [Section 3 c) 4]
Maybe	Vehicle and equipment maintenance and fueling [Section 3 c) 4]

Applicable to Site (Y, N, Maybe)	Sources of Potential Pollutants to Stormwater Discharges
Y	Routine maintenance activities involving fertilizers, pesticides, detergents, fuels, solvents, oils, etc. [Section 3 c) 4]
Y	On-site waste management practices (waste piles, liquid wastes, dumpsters, etc.) [Section 3 c) 7]
Y	Concrete truck/equipment washing, including the concrete truck chute, pump truck primary and associated fixtures and equipment [Section 3 c) 7]
N	Dedicated asphalt and concrete batch plants [Section 3 c) 5]
Y	Non-industrial waste sources such as worker trash and portable toilets [Section 3 c) 7]
Maybe	Other areas or procedures where potential spills can occur [Section 3 c) 4]

Applicable to Site (Y, N, Maybe)	Sources of Potential Pollutants to Stormwater Discharges
Y	Significant dust or particulate generating processes (including haul routes, masonry mixing, and silos) [Section 3 c) 2]
N	Power washing of building using detergents or other chemicals/solvents [Section 3 c) 4]
Y	Building/vertical construction (including paints, solvents, drywall, fire retardant, etc) [Section 3 c) 4, 7, 10]

Applicable to Site (Y, N, Maybe)	Sources of Potential Pollutants to Stormwater Discharges
Maybe	Stormwater or groundwater dewatering [Section 3 c) 9]

c) BMPs for Stormwater Pollution Prevention

This section of the SWMP narrative report shall include a narrative description of the appropriate controls and measures that will be implemented before, during and after construction activities at the project site to manage and control the runoff of pollutants.

The SWMP narrative report shall clearly describe the relationship between the phases of construction, and the implementation and maintenance of BMP controls and measures. For example, the report must indicate which controls will be implemented during each of the following phases of construction: clearing and grubbing for perimeter controls, installation of initial BMPs, clearing and grubbing, overlot grading, installation of interim BMPs, site construction, utility construction, vertical construction, other pertinent construction phases, final grading, stabilization, removal of BMPs, and Permit closeout.

1) Structural Practices

- Clearly describe the initial/interim, post-paving, and permanent structural site management practices to control erosion and sediment transport. Practices may include, but are not limited to: silt fences, diversion dikes, temporary slope drains, inlet protection, outlet protection, check dams, curb/rock socks, sediment control logs, compacted earthen berm, and terracing.

BMP Description: <i>Construction Fence (CF)</i>	
<i>Intended Use/Purpose:</i>	Limit access to areas to reduce vehicle tracking and to protect sensitive or areas not to be disturbed. May consist of orange plastic construction fence, T-posts with rope, or other traffic control devices as approved by the COA Erosion Control inspector.
<i>Appropriate Installation Timing:</i>	Throughout construction to limit access and before construction begins if used as sensitive area protection.
<i>Appropriate Removal Timing:</i>	Once there is no longer the potential for non-construction vehicle access and sensitive areas no longer require protection.

BMP Description: <i>Curb Sock (CS)</i>	
<i>Intended Use/Purpose:</i>	Curb socks are placed in a flowline to reduce the velocity of runoff and cause suspended solids to settle out and be filtered before allowing water to flow through the sock.
<i>Appropriate Installation Timing:</i>	Prior to disturbance upstream.
<i>Appropriate Removal Timing:</i>	Once all up gradient areas are at least temporarily stabilized.

BMP Description: <i>Inlet Protection (IPS, IPO, IPA, IPC)</i>	
<i>Intended Use/Purpose:</i>	Sediment control BMP, causes ponding and overtopping while allowing some runoff to filter through the rock.
<i>Appropriate Installation Timing:</i>	Before ground disturbing activities have occurred.
<i>Appropriate Removal Timing:</i>	Once upstream disturbed areas have been at least temporarily stabilized.

BMP Description: <i>Rock Sock (RS)</i>	
<i>Intended Use/Purpose:</i>	Rock socks are typically used either as a perimeter control or as part of inlet protection and provide sediment control by causing ponding and filtering runoff through the rock material.
<i>Appropriate Installation Timing:</i>	Rock socks should be installed prior to disturbance upstream.
<i>Appropriate Removal Timing:</i>	Rock socks should be removed once upstream areas are stabilized.

BMP Description: <i>Silt Fence (SF)</i>	
<i>Intended Use/Purpose:</i>	Sediment control device to be implemented to intercept sheet flows. Always installed on the contour to cause ponding and slowly allow weeping through the fabric to filter surface runoff.
<i>Appropriate Installation Timing:</i>	Before ground disturbing activities have occurred.
<i>Appropriate Removal Timing:</i>	Once upstream disturbed areas have been at least temporarily stabilized.

2) ***Non-Structural Practices***

- Clearly describe initial/interim, post-paving, and permanent stabilization practices, including site specific scheduling of the implementation of these practices. Site plans should ensure that existing vegetation is preserved where possible and that all disturbed areas are stabilized. Non-structural practices may include, but are not limited to: temporary seeding, mulching, temporary sod stabilization, vegetative buffer strips, temporary landscaping, temporary erosion control blankets/matting, temporary soil retention matting, surface roughening, dust suppression, seasonal schedule, and preservation of mature vegetation.

BMP Description: <i>Dust Suppression</i>	
<i>Intended Use/Purpose:</i>	Minimize erosion caused by the force of wind by applying water as necessary.
<i>Appropriate Installation Timing:</i>	To be used throughout the duration of the project as needed.
<i>Appropriate Removal Timing:</i>	None.

BMP Description: <i>Erosion Control Blanket (ECB) – Temporary</i>	
<i>Intended Use/Purpose:</i>	Erosion control blankets are used as a temporary erosion control measure on disturbed areas especially slopes 4:1 and greater.
<i>Appropriate Installation Timing:</i>	Temporary erosion control blanket should be installed once a disturbed surface will remain inactive for a prolonged period of time and may be subject to erosion.
<i>Appropriate Removal Timing:</i>	Temporary erosion control blankets may be removed once construction activities start back up.

BMP Description: <i>Preservation of Existing Vegetation</i>	
<i>Intended Use/Purpose:</i>	By preserving the existing vegetation at site and limiting the amount of disturbed area downstream BMPs will encounter less sediment loading in any stormwater runoff at site making maintenance easier and reducing the potential for a discharge from site.
<i>Appropriate Installation Timing:</i>	Throughout the project duration.
<i>Appropriate Removal Timing:</i>	None.

BMP Description: <i>Surface Roughening (SR)</i>	
<i>Intended Use/Purpose:</i>	Surface roughening is an erosion control practice that involves tracking, scarifying, imprinting, or tilling a disturbed area to provide temporary stabilization of disturbed areas. Surface roughening creates variations in the soil surface that help to minimize wind and water erosion.
<i>Appropriate Installation Timing:</i>	Surface roughening is often implemented in conjunction with grading and can be used to provide temporary stabilization of disturbed areas.
<i>Appropriate Removal Timing:</i>	Surface roughening may be removed during final grading and stabilization if other erosion control BMPs are implemented. Surface roughening may stay in place and be used in conjunction with seeding and mulch to reduce erosion while awaiting growth.

BMP Description: <i>Temporary Seeding and Mulching (SM)</i>	
<i>Intended Use/Purpose:</i>	Temporary seeding can be used to stabilize disturbed areas that will be inactive for an extended period. The seed mix used for temporary seed will be the COA approved annual seed mix.
<i>Appropriate Installation Timing:</i>	When the soil surface is disturbed and will remain inactive for an extended period (typically 30 days or longer), proactive stabilization measures should be implemented.
<i>Appropriate Removal Timing:</i>	None.

3) Phase Construction Activity and BMP Implementation

This section shall describe the relationship between the phases of construction, and the implementation and maintenance of BMP controls and measures. For example, indicate which controls will be implemented during each of the following phases of construction: prior to clearing and grubbing for perimeter controls (installation of initial BMPs), clearing and grubbing, overlot grading, installation of interim BMPs, site construction,

utility construction, vertical construction, other pertinent construction phases, final grading, stabilization, removal of BMPs, and Permit closeout.

- Clearly describe the various phases of construction and the implementation of BMPs to be used during each phase. Examples of project phases may include, but are not limited to, demolition, clearing and grubbing, overlot grading, over-excavation, road construction, utility installations, vertical construction, fine grading, and final stabilization. The description for a particular phase may have sub-phases. For example, the overlot grading of an 80 acre site may have to describe multiple sub-phases for the 40 acre disturbance limitation. Another example would be vertical construction phase may describe sub-phases of the construction such as grading, foundations, framing, finishing, and stabilization. For more information, see *Rules and Regs*, Chapter 2, Section 2.2.1)

Note: Some construction information may need to be added once a contractor(s) are involved. See the Manual and below for more information.

Phase Description: <i>Before construction - Initial</i>	
<i>Duration of phase (start/end dates):</i>	TBD May 2018 – June 2018
<i>BMPs Associated with the Phase:</i>	Install construction fence, tree preservation, concrete washout area, curb socks, inlet protection (all types), portable toilet protection, sediment basins, silt fence, stabilized staging areas, stockpile areas and vehicle tracking control.
<i>Describe Temp/Final Stabilization for Phase:</i>	BMPs will be kept in place for interim construction activities.

Phase Description: <i>During construction – Interim</i>	
<i>Duration of phase (start/end dates):</i>	TBD June 2018 – October 2018
<i>BMPs Associated with the Phase:</i>	Install diversion ditches, surface roughening, inlet and outlet protection and curb socks on any new structures, and begin landscaping and placing seed and mulch as well as erosion blanket as possible. Install permanent BMPs such as permanent outlet protection and permanent water quality features.
<i>Describe Temp/Final Stabilization for Phase:</i>	BMPs will be kept in place for interim construction activities.

Phase Description: <i>After construction - Final</i>	
<i>Duration of phase (start/end dates):</i>	TBD October 2018 - November 2018
<i>BMPs Associated with the Phase:</i>	Seed and mulch, erosion control blanket, sediment control log, sweeping, and good housekeeping practices.
<i>Describe Temp/Final Stabilization for Phase:</i>	Permanent BMPs such as seeding and blanket will remain in place indefinitely while all other structural BMPs such as sediment control log and inlet protection will be removed once there is no potential for surface runoff to cause a discharge of a potential pollutant.

a. Overlot Grading Specific Practices

Overlot grading specific practices should address items such as: surface roughening, blanketing, terracing, mulching, temporary seeding, permanent seeding, temporary sediment pond construction and removal, phasing, haul routes, disturbance limits, rough cut street controls, etc.

- Address haul routes may be designated on the SWMP updates and shall take into consideration drainage, erosion and sediment control BMPs, along with interim stabilization measures.
- Discuss interim stabilization may be provided via plan amendment by the contractor and the engineer at the Erosion Control Kick Off meeting. These measures shall be provided with timeframes and down gradient controls.

BMP Description: *Annual Seed*

<i>Intended Use/Purpose:</i>	Stabilization of disturbed areas at site. The seed mix used to achieve temporary stabilization is a COA approved annual seed. The permanent stabilization seed mix will be applied as shown on the SWMP drawing for the final phase. Erosion control blanket will also be installed per COA specifications. Mulch at site will consist of evenly distributing straw and crimping it in place per the COA SM specification.
<i>Appropriate Installation Timing:</i>	After final grade has been achieved. Seeding will occur from March through early May and in the fall after mid-October until snow cover or frozen soil precludes planting. Between seeding dates temporary erosion control such as surface roughening will be utilized as a temporary stabilization method.
<i>Appropriate Removal Timing:</i>	None.

BMP Description: *Surface Roughening (SR)*

<i>Intended Use/Purpose:</i>	Surface roughening is an erosion control practice that involves tracking, scarifying, imprinting, or tilling a disturbed area to provide temporary stabilization of disturbed areas. Surface roughening creates variations in the soil surface that help to minimize wind and water erosion.
<i>Appropriate Installation Timing:</i>	Surface roughening is often implemented in conjunction with grading and can be used to provide temporary stabilization of disturbed areas.
<i>Appropriate Removal Timing:</i>	Surface roughening may be removed during final grading and stabilization if other erosion control BMPs are implemented. Surface roughening may stay in place and be used in conjunction with seeding and mulch to reduce erosion while awaiting growth.

Temporary drainage BMPs (diversion ditches, sediment traps or sediment basins) shall be maintained at all times.

- Discuss timing and procedural requirements for implementation, maintenance and removal of these items during this period of construction.

BMP Description: <i>Diversion Ditch (DD)</i>	
<i>Intended Use/Purpose:</i>	Diversion ditches are temporary storm conveyance channels constructed either to divert runoff around slopes or to convey runoff to additional sediment control BMPs prior to discharge of runoff from a site.
<i>Appropriate Installation Timing:</i>	Prior to disturbance upstream.
<i>Appropriate Removal Timing:</i>	Diversion ditches can be removed when surface flows no longer have the potential to cause erosion on slopes or no longer need to be channeled to a sediment control BMP such as a sediment trap.

b. Vertical and General Construction Requirements – See Appendix for Table of Required Information

- Staging areas change during construction regularly. Therefore, if “con/conex” boxes are to be utilized and if they are to include liquid pollutants, then a redundant BMP measure must be provided
- Site drainage will need to be maintained during vertical construction. Review conditions to ensure that it will continue to work as shown during the grading/utility timeframes.
- Provide redundant BMPs for generators and mobile concrete washouts to protect from fuel/hydraulic leaks
- Continuously review the down gradient BMPs within the impervious and disturbed areas to ensure that conveyances, inlets and outlets are protected appropriately during this phase.
- Areas of disturbance outside of the building envelope shall still require BMPs.
- Continuously review the timing/phasing of the project to ensure the appropriate BMPs are implemented as construction continues. Deletion of BMPs shall require different measures to be implemented upon deletion.
- BMPs for keeping impervious surfaces clean may need to be enhanced or added to as construction continues.
- Review and implement BMP measures to control roof drainage. This becomes a point source and may cause extensive erosion on site.

Optional Section – To be included if the items in bullet points cannot be addressed elsewhere in this report.

A Plan Amendment from the contractor shall be required to be submitted to the engineer of record and City of Aurora Water Engineering Plans Reviewer three (3) business days prior to the Erosion Control Kick-Off Meeting. This submittal shall provide narrative information and the associated details required for vertical construction BMPs (structural and non-structural) that will be implemented during this phase of construction.

- Provide a mixing station detail/area for masonry/brick. If the site is going to bring in silos for masonry mixing, wind protection will be required to minimize the maximum extent practicable the dust from impacting adjacent buildings and streets.
- Saw cutting station detail/area
- Options for handling paints, solvents, glues (i.e. utilize the CWS or provide alternative)
- Provide physical and procedural BMPs for clean up along the building during the installation of brick, stone or stucco
- Access may be required around the building, defining a haul route may be necessary and denote stabilization needs on this proposed haul route
- Address waste handling procedures for drywall, painters, carpet layers etc.
- Stream Diversion Method
- Cranes when access is required around the building and may impact BMPs, relocation may be required

4) Material Handling and Spill Prevention

This section shall describe any procedures and locations for all practices implemented at the site that will be used to minimize impacts from identified potential pollutant sources. BMPs need to address many different pollutant sources that include, but are not limited to exposed storage of construction materials, liquid contaminants, contaminated soils management, fueling procedures, redundant measures for any spill or leak sources, and equipment maintenance procedures. Activities involving potential for spills shall have spill prevention and spill response procedures identified.

- Identify and describe how the sources of potential pollutants to stormwater discharges identified in Section 3.2 will be controlled through BMP selection and implementation. The information provided may address frequency, seasonal considerations, characteristics of the area and surface type, primary and secondary containment, proximity to drainageways and stormwater facilities.

BMP Description: *Generator Containment*

<i>Intended Use/Purpose:</i>	Contain any spills or leaks that may occur from fueling activities or malfunctions of a generator. All generators will have secondary containment adequately sized to contain any spill that may occur.
<i>Location(s)</i>	Staging areas and mobile generators throughout site.

BMP Description: *Good Housekeeping*

<i>Intended Use/Purpose:</i>	Implement construction site good housekeeping practices by providing dumpsters and other storage containers as needed to prevent pollution associated with solid, liquid and hazardous construction-related materials and wastes.
<i>Location(s)</i>	Throughout the site.

BMP Description: *Stockpile Management*

<i>Intended Use/Purpose:</i>	Stockpile management should be used when soils or other erodible materials are stored at the construction site. Special attention should be given to stockpiles in close proximity to natural or manmade storm systems. Stockpiles should be contained at all times and site perimeter control may be adequate to contain a stockpile. If site perimeter controls are not adequate to contain a stockpile it shall have a containment BMP installed such as sediment control log, silt fence, compacted berm, or rock socks.
<i>Location(s)</i>	Throughout the site.

BMP Description: *Vehicle Fueling*

<i>Intended Use/Purpose:</i>	Fueling activities will not occur in close proximity to drainageways or storm inlets and spill kits, absorbent, and drip pans will be available at site. Any materials used for spill cleanup will be disposed of in accordance with applicable regulations.
<i>Location(s)</i>	Throughout the site.

BMP Description: SPILL RESPONSE -Cleanup and Removal Procedures

NOTE: IN CASE OF FIRE, EVACUATE ALL PERSONNEL FROM THE IMMEDIATE AREA, RENDER FIRST AID TO ANYONE WHO IS INJURED, AND DIAL 911 IMMEDIATELY. TAKE APPROPRIATE STEPS TO PROTECT HUMAN LIFE AND TO CONTROL FIRES FIRST. SPILL CONTROL IS SECONDARY.

- Upon detection of any spill, the first action to be taken is to ensure personal safety. All possible ignition sources, including running engines, electrical equipment (including cellular telephones, etc.), or other hazards will be immediately turned off or removed from the area. The extent of the spill and the nature of the spilled material will be evaluated to determine if remedial actions could result in any health hazards, escalation of the spill, or further damage that would intensify the problem. If such conditions exist, a designated employee will oversee the area of the spill and the construction SWMP Administrator will be notified immediately.
- The source of the spill will be identified and if possible the flow of pollutants stopped if it can be done safely. However, no one should attend to the source or begin cleanup of the spill until **ALL** emergency priorities (fire, injuries, etc.) have been addressed.

Small Spills

Small spills (usually <5 gallons) consist of minor quantities of gasoline, oil, anti-freeze, or other materials that can be cleaned up by a single employee using readily available materials.

The following procedures should be used for clean-up of small spills:

- a. Ensure personal safety, evaluate the spill, and if possible, stop the flow of pollutants.
- b. Contain the spread of the spill using absorbents, portable berms, sandbags, or other available measures.
- c. Spread absorbent materials on the area to soak up as much of the liquid as possible and to prevent infiltration into the soil.
- d. Once the liquids have been absorbed, remove all absorbents from the spill and place the materials in a suitable storage container. On paved areas, wipe any remaining liquids from the surface and place the materials in a storage container. Do not spray or wash down the area using water. For open soil areas, excavate any contaminated soil as soon as possible and place the soil in a suitable storage container. All materials will then be transported off-site for disposal.
- e. If immediate transfer and storage of the contaminated soil is not practical, excavate and place the contaminated soil on a double thickness sheet of 3-mil or higher polyethylene film. In addition, a small berm should be formed around the outer edges of the soil stockpile, underneath the polyethylene film, to ensure that contaminants are not washed from the site during precipitation events and that materials do not seep through the berm.
- f. Record all significant facts and information about the spill, including the following:
 - Type of pollutant

- Location
 - Apparent source
 - Estimated volume
 - Time of discovery
 - Actions taken to clean up spill
- g. Notify the SWMP Administrator of the spill and provide the information from Item f. The SWMP Administrator will then contact the City of Aurora Erosion Control Staff.

Medium to Large Spills

Medium to large spills consist of larger quantities of materials (usually >5 – 25 gallons) that are used on site that cannot be controlled by a single employee. Generally, a number of facility personnel will be needed to control the spill and a response may require the suspension of other facility activities.

The following procedure shall be used for the cleanup of medium to large spills:

- a. Ensure personal safety, evaluate the spill, and if possible, stop the flow of pollutants.
- b. Immediately dispatch a front-end loader or similar equipment to the spill and construct a berm or berms down gradient of the spill to minimize the spread of potential pollutants. On paved surfaces, portable berms, sandbags, booms, or other measures will be used to control the lateral spread of the pollutants.
- c. When the spread of the spill has been laterally contained, contact the SWMP Administrator or designated facility employee and provide them information on the location, type, and amount of spilled material, and a briefing on the extent of the spread and measures undertaken to contain the contaminants.
- d. Depending on the nature of the spill, mobilize additional resources as needed to contain the contaminants.
- e. Cleanup will commence when the lateral spread has been contained and the notification to the SWMP Administrator has been made.
- f. Freestanding liquid will be bailed or pumped into 55-gallon storage drums, steel tanks, or other suitable storage containers. When all the liquid has been removed from the pavement or soil layer, absorbents will be applied to the surface and transferred to the storage containers when they have soaked up as much of the spill as possible.
- g. On paved surfaces, the remaining contaminants will be removed to the extent possible, with rags, sweeping, or similar measures. The area of the spill will not be sprayed or washed down using water. Any contaminant soaked materials will be placed into the storage containers with the other absorbents.
- h. The remaining contaminated soils will be excavated and loaded into a dump truck(s) for disposal off-site at a designated facility. If transport off-site is not immediately available, the remaining soils will be stockpiled on a double thickness sheet of 3-mil or higher polyethylene film. In addition, a small berm will be formed around the outer edges of the soil stockpile, underneath the

polyethylene film, to ensure that contaminants are not washed from the site during precipitation and do not seep through the berm.

- i. Record all significant facts and information about the spill, including the following:
 - Type of pollutant
 - Location
 - Apparent source
 - Estimated volume
 - Time of discovery
 - Actions taken to clean up spill
- j. Provide the SWMP Administrator (or designated employee) with the information from Item i. The SWMP Administrator will then contact the City of Aurora Flow Control Center.

NOTIFICATION

Notification to the Colorado Department of Public Health & Environment (CDPHE) and the City of Aurora is required if there is any release or suspected release of any substance, including oil or other substances that spill into or threaten State waters. Unless otherwise noted, notifications are to be made by the SWMP Administrator and only after emergency responses related to the release have been implemented. This will prevent misinformation and assures that notifications are properly conducted.

The notification requirements are as follows:

1. **Spills into/or Threatens State Waters:** Immediate notification is required for releases that occur beneath the surface of the land or impact or threaten waters of the State or threaten the public health and welfare. Notifications that will be made are:
 - a. For any substance, regardless of quantity, contact CDPHE at 1-877-518-5608. State as follows:
 - a) Give your name.
 - b) Give location of spill (name of city).
 - c) Describe the nature of the spill, type of products, and estimate size of spill.
 - d) Describe type of action taken thus far, type of assistance or equipment needed.
 - b. For any quantity of oil or other fluids, call the National Response Center at 1-800-424-8802. State as follows:
 - a) Give your name.
 - b) Give location of spill (name of city and state).
 - c) Describe the nature of the spill, type of product, and estimate size of spill.
 - d) Describe type of action taken thus far, type of assistance or equipment needed.
2. **Reportable Quantity Spill on Land Surface:** Immediate notification is required of a release upon the land surface of an oil in quantity that exceeds 25 gallons, or of a hazardous substance that equals or exceeds 10 pounds or its reportable quantity under Section 101(14) of the Comprehensive Environmental Response, Compensation Liability Act (CERCLA) of 1980 as amended (40 CFR Part 302) and Section 329 (3) of the Emergency Planning and Community Right to Know Act of 1986 (40 CFR Part

355) whichever is less. This requirement does apply at a minimum to the substances listed in Table A below.

TABLE A

Substances Requiring Notification

SUBSTANCE	REPORTABLE QUANTITY
Motor Oil	25 Gallons
Hydraulic Oil	25 Gallons
Gasoline/Diesel Fuel	25 Gallons

The notification procedures to be followed are:

- a) Give your name.
 - b) Give location of spill (name of city and state).
 - c) Describe nature of the spill, type of product, and estimate size of spill.
 - d) Describe type of action taken thus far, type of assistance or equipment needed.
3. Notification is not required for release of oil upon the land surface of 25 gallons or less that will not constitute a threat to public health and welfare, the environmental or a threat of entering the waters of the State.
4. Notification, as required in paragraphs 1 and 2 above, will be made to the CDPHE using the 24-hour telephone number to report environmental spills. All information known about the release at the time of discovery is to be included, such as the time of occurrence, quantity and type of material, location and any corrective or clean-up actions presently being taken. Table B lists these phone numbers.

SPILL RESPONSE CONTACTS

TABLE B

Emergency Notification Contacts

Name/Agency	Number
City of Aurora Fire Department	911
City of Aurora Police Department	911
Ambulance	911
Hospital	911
National Response Center	1-800-424-8802
CDPHE – Report Environmental Spills (24 hrs/day)	1-877-518-5608
City of Aurora – Water Dept Erosion Control Staff	303-326-8645

It is the responsibility of the SWMP Administrator to contact the City of Aurora, CDPHE, and/or the National Response Center.

- **The National Response Center** is to be contacted when a release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR 110, 4- DFR 117, or 40 CFR 302 occurs during a 24-hour period.
- Notification to the **CDPHE** and **COA** is required if there is any release or suspected release of any material, including oil or hazardous substances that spill into or threaten state waters.

REPORTS

The CDPHE and COA require written notification of a spill or discharge of oil or other substance that may cause pollution of the waters of the State of Colorado. A written report must be submitted to the Water Quality Control District (WQCD) and the COA Erosion Control Staff within five days after becoming aware of the spill or discharge.

The CDPHE and COA require a written final report within 15 days for all releases of an oil or hazardous substance that require implementation of a contingency plan. The CDPHE and COA may also require additional reports on the status of the clean up until any required remedial action has been complete.

Written notification of reports must contain at a minimum:

1. Date, time, and duration of the release.
2. Location of the release.
3. Person or persons causing and responsible for the release.
4. Type and amount of oil or substance released.
5. Cause of the release.
6. Environmental damage caused by the release.
7. Actions taken to respond, contain, and clean up the release.
8. Location and method of ultimate disposal of the oil or other fluids.
9. Actions taken to prevent a reoccurrence of the release.
10. Any known or anticipated acute or chronic health risks associated with the release.
11. When appropriate advice regarding medical attention necessary for exposed individuals.

5) Dedicated Concrete or Asphalt Batch Plants

- Describe measures to control stormwater pollution from dedicated concrete batch plants or dedicated asphalt batch plants covered by the SWMP.

None used at site.

BMP Description: <i>N/A</i>	
Intended Use/Purpose:	
Appropriate Installation Timing:	
Appropriate Removal Timing:	

6) Vehicle Tracking Control

- Describe all practices implemented at the site to control potential sediment discharges from vehicle tracking. Practices must be implemented for all areas of potential vehicle tracking, and can include: minimizing site access; street sweeping or scraping; tracking pads; stabilized staging and parking areas; requiring that vehicles stay on paved areas on-site; wash racks; contractor education; and/or sediment control BMPs, etc

BMP Description: Mandatory sweeping of all internal and adjacent external paved areas is required on a weekly basis at a minimum. This applies until Initial Close-Out acceptance. At that time it will be on an as needed basis.

BMP Description: <i>Vehicle Tracking Controls (VTC)</i>	
Location(s):	Northeast side of site.
Intended Use/Purpose:	Vehicle tracking controls consist of two types of BMPs, structural and conceptual. Structural BMPs such as vehicle tracking pads knock dirt off vehicle tires and construction fence limits access to disturbed areas. Conceptual vehicle tracking control BMPs include additional sweeping and limiting vehicle access due to weather conditions.
Appropriate Installation Timing:	VTC's should be installed once vehicles have the potential to drive on and track out any disturbed soil or potential pollutant. Conceptual BMPs such as sweeping should be utilized throughout the duration of the project.
Appropriate Removal Timing:	Once vehicle access ceases.

BMP Description: <i>Stabilized Staging Area (SSA)</i>	
Location(s):	North side of site.
Intended Use/Purpose:	A stabilized staging area is a clearly designated area where construction equipment and vehicles, stockpiles, waste bins, and other construction-related materials are stored. This also provides a surface for loading and unloading operations as well as vehicle storage without having vehicles enter onto a disturbed surface. Contractor required to work with Owner to review staging area impacts to adjacent shopping center tenants parking.
Appropriate Installation Timing:	Assembled prior to other construction activities beginning at site.
Appropriate Removal Timing:	Should be removed once construction activities requiring the storage of materials, vehicles, and construction debris have ceased.

BMP Description: <i>Sweeping</i>	
Location(s):	Throughout site.
Intended Use/Purpose:	Additional sweeping will be utilized throughout the project area in conjunction with vehicle tracking pads to manage any trackout that may occur. Sweeping is required on a weekly basis at a minimum.
Appropriate Installation Timing:	Throughout the project duration.
Appropriate Removal Timing:	None.

7) Waste Management and Disposal, Including Concrete Washout

- Clearly describe the practices implemented at the site to control stormwater pollution from all construction site wastes (liquid and solid), including concrete washout activities and liquid waste washouts, dumpsters, worker trash, and portable toilets.

BMP Description: <i>Concrete Washout Area (CWA)</i>	
<i>Location(s):</i>	Near concrete and masonry work, see SWMP sheets for exact locations. Includes the use of Eco-Pans.
<i>Intended Use/Purpose:</i>	Provide a fully contained area to washout concrete truck chutes and tools. May need to be lined if in proximity to surface waters. May consist of a dug out pit as per the standard COA detail or an Eco-Pan (see variance BMPS). If installed in an A or B soil type the CWA must be lined with an impervious liner to ensure no seepage into the groundwater.
<i>Appropriate Installation Timing:</i>	Once concrete and masonry work begins.
<i>Appropriate Removal Timing:</i>	May be removed once concrete and masonry work is complete.

BMP Description: <i>Good Housekeeping</i>	
<i>Location(s):</i>	Throughout site.
<i>Intended Use/Purpose:</i>	Implement construction site good housekeeping practices by providing dumpsters and other storage containers as needed to prevent pollution associated with solid, liquid and hazardous construction related materials and wastes.
<i>Appropriate Installation Timing:</i>	Throughout the project duration.
<i>Appropriate Removal Timing:</i>	None.

BMP Description: <i>Saw Cutting Containment</i>	
<i>Location(s):</i>	Throughout site.
<i>Intended Use/Purpose:</i>	Prevent saw cut discharge/slurry or process water from discharging from site and adversely impacting receiving waters or MS4. BMPs for saw cutting activities include removing slurry, process water, and cutting with an on-site vacuum for the liquid waste and additional sweeping for solid waste. Additional containment BMPs may be needed to pond up process water.
<i>Appropriate Installation Timing:</i>	Vacuuming and sweeping will occur during saw-cutting operation.
<i>Appropriate Removal Timing:</i>	Upon completion of saw cutting operations.

BMP Description: <i>Portable Toilet Protection (PTP)</i>	
Location(s):	Mobile, location coordinated by Contractor.
Intended Use/Purpose:	Prevent the overturning or leaking of portable toilets via anchoring and containment.
Appropriate Installation Timing:	Once portable toilets are located at site.
Appropriate Removal Timing:	Once portable toilets are no longer at site.

8) BMP Specifications

BMP Details for installation and maintenance shall be the City of Aurora Standard Details in Appendix D of the (*City of Aurora Rules and Regulations Regarding Stormwater Discharge Associated with Construction Activities (Rules and Regs)*), latest revision, an approved variance, or an approved plan amendment. All approved variances must be documented in the SWMP. It is understood that not all details in the COA Rules and Regs will be used on this project site, but that all details are available for implementation if unforeseen circumstances warrant their use. Proper procedures must be used to update the living document and get approval as documented in the COA Rules and Regs. All physical BMPs require a detail to show installation and maintenance information. If a detail is not available through the manufacturer, then one must be created by the preparer of this SWMP narrative report.

9) Groundwater and Stormwater Dewatering

- The SWMP shall clearly describe the practices to be implemented at the site to control stormwater pollution from the dewatering of groundwater or stormwater from excavations, wells, etc.
- For any construction dewatering of stormwater from construction areas, describe the BMPs to be used to control additional erosion and transport of sediment.

Note: This City of Aurora Stormwater permit does not authorize dewatering of groundwater. A separate State permit is required for this activity.

None anticipated for the site. Should the contractor encounter groundwater and require a stormwater dewatering permit a separate state permit must be obtained by the contractor.

10) Developer/Builder Specific Practices

Include a description of standard practices of the company for whom this SWMP is being developed. At a minimum it shall include:

- Standard practices for construction operations during wet weather conditions and winter weather conditions
- Methods used to obtain compliance from sub-contractors (i.e. fines, education, etc)
- Stormwater education policies for educating personnel and subcontractors
- Company Standard Operating Procedures as they relate to stormwater management (as appropriate)
- Describe any standard construction practices that will be used on the site such as material loading and unloading practices, lot controls, lot access etc.

Note: Any practices requiring a variance that are discussed here must reference the variance section, and must be requested in the variance section, or they will be considered unapproved and not allowed.

<i>BMP Description: Standard practices during wet and winter weather conditions</i>	
<i>Intended Use/Purpose:</i>	During wet and winter weather conditions the following assessments should be made: • Condition of vehicle tracking controls • Condition of structural BMPs that can be affected by snow management activities in the area i.e. plowing BMPs identified as no longer operating in an effective manner will be maintained in accordance with the COA and CDPHE permits. Wet and winter weather assessments are not always written however any maintenance activities resulting from an assessment should be documented.
<i>Appropriate Installation Timing:</i>	Wet and winter weather procedures should be reviewed before weather events, assessments should be conducted during the event, and post-storm inspections should be conducted after the event.
<i>Appropriate Removal Timing:</i>	Once construction is complete.

BMP Description: <i>Stormwater Personnel Training</i>	
<i>Intended Use/Purpose:</i>	To educate personnel at site about the installation, maintenance, and purpose of stormwater management. Training will also focus on good housekeeping practices, and spill containment and control. Site Erosion Control Supervisor will hold an advanced stormwater certification (i.e. CDOT ECS, CISEC, etc.).
<i>Appropriate Installation Timing:</i>	Personnel will be given the Stormwater orientation presentation before conducting work at site and must initial and sign the Safety Orientation Policies and Procedures.
<i>Appropriate Removal Timing:</i>	None

BMP Description: <i>Sub-contractor compliance</i>	
<i>Intended Use/Purpose:</i>	To ensure compliance with all stormwater requirements.
<i>Appropriate Installation Timing:</i>	Sub-contractors will be given the Stormwater orientation presentation before conducting work at site and must initial and sign the Safety Orientation Policies and Procedures.
<i>Appropriate Removal Timing:</i>	None

BMP Description: <i>Construction Site Access</i>	
<i>Intended Use/Purpose:</i>	Access to the site will be limited by the use of perimeter control BMPs such as silt fence or by the installation of construction fence to ensure proper use of vehicle tracking control BMPs.
<i>Appropriate Installation Timing:</i>	Access controls should be installed before construction begins.
<i>Appropriate Removal Timing:</i>	Once there is limited potential for vehicle access (final phase).

Additional Developer/Builder practices not listed herein shall be submitted 3 days prior to the Erosion Control kick-off meeting for review and approval.

SECTION 4 FINAL STABILIZATION AND LONG TERM STORMWATER MANAGEMENT

a) Final Stabilization Measures

Include a description of the proposed measures to be used to achieve final stabilization and long-term stormwater control. Revegetation with seeding and mulching, revegetation with seeding with erosion control blankets, landscaping, green roofs, permeable paving, permanent water quality ponds and permanent outlet protection are examples of final stabilization measures.

b) Seed Mix Information

Provide the name of the City of Aurora standard seed mix(es) that may be appropriate for the site and the soils anticipated for the site and the preferred method(s) for protecting the seed. If the site is not using a COA standard seed mix, then a variance request must be submitted and the preferred seed mix must be provided with the application rates.

c) Final Stabilization Notes

See Chapter 5 of the Rules and Regulations for more information.

- 1) *Final stabilization is reached when all soil disturbing activities at the site have been completed, and uniform vegetative cover has been established with a density of at least 70% of pre-disturbance levels, or equivalent permanent physical erosion reduction methods have been employed.*
- 2) *Vegetative coverage density does not apply to paved areas, walks, buildings, or other hard surface impermeable areas.*
- 3) *Establishment of a vegetative cover capable of providing the erosion control equivalent to pre-existing conditions at the site can be considered final stabilization (i.e. landscape rocks, mulch, shrubs, etc). This determination will be made by the City of Aurora Water Department Erosion Control Program Staff prior to the close-out of the permit.*

BMP Description: *Seed and Mulch*

<i>Intended Use/Purpose:</i>	Stabilization of disturbed areas at site. The seed mix will be applied as indicated on the SWMP drawing for any areas not to be permanently hardscaped in the interim/final phase of construction. Erosion control blanket will also be installed per COA specifications. Mulch at site will consist of evenly distributing straw and crimping it in place per the COA SM specification. Seed Mix: Sandy Loam to Clay Loam Soil Seed Mix (C soil) Within 25' of roadways: Alkali Soil Seed Mix
<i>Appropriate Installation Timing:</i>	After final grade has been achieved. Seeding will occur from March through early May and in the fall after mid-October until snow cover or frozen soil precludes planting. Between seeding dates temporary erosion control such as surface roughening will be utilized as a temporary stabilization method.
<i>Appropriate Removal Timing:</i>	None

BMP Description: *Erosion Control Blanket (ECB)*

<i>Intended Use/Purpose:</i>	Erosion control blankets are used in conjunction with revegetation efforts, providing seedbed protection from wind and water erosion and enhance survivability, particularly on slopes 4:1 and steeper and in channels.
<i>Appropriate Installation Timing:</i>	Erosion control blanket should be installed once disturbed slopes or channels are at final grade or will remain undisturbed for a prolonged period of time and may be subject to erosion.
<i>Appropriate Removal Timing:</i>	Erosion control blankets must be double net 100% biodegradable and therefore do not require removal.

SECTION 5 INSPECTIONS AND MAINTENANCE

This section shall describe procedures to inspect and maintain, in good effective operating condition, the vegetation, erosion, and sediment control measures and all other protective measures identified in the plan.

The following are the required frequencies of inspections:

- i. *Prior to Initial Closeout Acceptance:* Permittee shall self-inspect the site at least every 7 calendar days and within 24-hours after the end of any precipitation event or snowmelt event that results in runoff and causes surface erosion, except as allowed in Item iii below.
- ii. *Following Initial Closeout Acceptance and until permit closeout:* Permittee shall self-inspect the site at least every 30 calendar days, and within 24-hours after the end of any precipitation event or snowmelt event that results in runoff and causes surface erosion
- iii. *Post-Precipitation Event Inspections for Temporarily Idle Sites:* If a site is temporarily idle and no construction activities will occur during the 48 hours following a storm event, the post-precipitation event (including snowmelt) inspection shall be conducted prior to commencing construction activities on the site, but no later than 72 hours following the storm event.

— Describe all other procedures necessary to inspect and maintain all BMPs on this site.

Note: Do not duplicate information that is provided in the COA Standard Details for Maintenance and Inspection.

BMP Maintenance or Inspection Description:

All erosion and sediment control BMPs will be maintained in effective operating condition. Maintenance of BMPs at site will be in accordance with COA Standard Details or the variance details included in this SWMP and once BMPs are deemed to no longer be in effective operating condition they will be maintained or replaced.

Inspections at site will be conducted in accordance with COA standards. The scope of the inspections at site will include the construction site perimeter, all disturbed areas, material and/or waste storage areas that are exposed to precipitation, and discharge locations. Locations where vehicles access the site shall be inspected for evidence of, or the potential for, pollutants leaving the construction site boundaries, entering the stormwater drainage system, or discharging into state waters.

All erosion and sediment control practices identified in this SWMP will be evaluated to ensure that they are maintained and operating effectively. If any BMPs are found to be ineffective or inappropriate for the conditions at site they will be removed and replaced with a BMP adequate for the conditions at site.

SECTION 6 PROBABLE COST FOR INSTALLATION OF BMPs

The standardized probable cost form shall include costs for required maintenance during the construction phase and shall establish the required Fiscal Security amount.

*Notes: City of Aurora projects do not require Fiscal Security, unless otherwise required.
The Forms should be located in the Appendix of this SWMP narrative report.*

- List the total cost and the Fiscal Security amount, which is equal to the 25% Maintenance Cost amount of the higher of the two forms.

Initial BMP Total Cost:	\$	13861
Initial BMP Maintenance Cost:	\$	3465
Post-Paving BMP Total Cost:	\$	9632
Post-Paving BMP Maintenance Cost:	\$	2408
Fiscal Security amount:	\$	3465

SECTION 7 CALCULATIONS MADE FOR THE DESIGN

Include calculations made in the design of the SWMP, including calculations for sizing of sediment basins, design of erosion control matting, soil retention matting, sediment traps, diversion ditches, temporary stream crossings, weir sizing, or sizing of outlet protection riprap in the appendix with a summary of the results below.

- Address any required additional information below.

[Calculations for the sediment basin and riser pipe are included in Appendix D.](#)

SECTION 8 VARIANCE REQUESTS

As may be reasonably required by COA, additional information shall be included here. A listing of variances requested and/or requests for special consideration of innovative BMPs should be provided along with their justification.

Any variance from COA Rules and Regulations Regarding Stormwater Discharges Associated with Construction Activities shall be approved by the City of Aurora. If it is not specifically listed within this section of the narrative, then it shall not be considered an approved variance. There are provisions for Variance requests once construction has begun. See Chapter 3 Section 3.3.3 of the Rules and Regulations. In such cases the City of Aurora approved variance shall be added to the field maintained SWMP.

Note: Manufacturer documentation and specifications for requested variances shall be provided in the appendices. If no detail is provided for a physical BMP, the request for variance will automatically be denied.

- List all Variances being requested

Variance Description:	
Intended Use/Purpose:	
Reason for Variance:	
Maintenance Requirements:	
Appropriate Installation Timing:	
Appropriate Removal Timing:	

None anticipated.

REFERENCES

References should include the drainage report, the COA Rules and Regs, and the CDPHE permit at a minimum. Other relevant references may be included.

Rules and Regulations Regarding Stormwater Discharges Associated with Construction Activities, current revision

Colorado Department of Public Health and Environment CDPS General Permit – Stormwater Discharges Associated with Construction Activity, current revision to expire June 30, 2012.

CDPHE, 2007. "Stormwater Discharges Associated with Construction Activity, General Permit Application and Stormwater Management Plan Preparation Guidance" Colorado Department of Public Health and Environment, July 2007.

NRCS, 2011. "Web Soil Survey, <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>", National Resource Conservation Service, April, 2011.

UDFCD, 2010. "Urban Storm Drainage Criteria Manual, Volume 3, Best Management Practices", Urban Drainage and Flood Control District, Denver, Colorado, November 2010.

UDFCD, 2012. "Floodplain Map, http://udfcd.org/floodplain_mapping.htm", Urban Drainage and Flood Control District, Denver, Colorado, 2012.

SWMP APPENDIX A – Floodplain Information



MAP SCALE 1" = 500'

250 0 500 1000 FEET

AREA NORTH OF BOUNDARY DEFINED AS FEMA NON-PRINTED FLOODPLAIN BOUNDARY. CITY OF AURORA NFHL FLOOD MAP DEFINES AREA NORTH OF SOUTH PARKER ROAD AS AREA OF MINIMAL FLOOD HAZARD, ZONE X.

JOINS PANEL 0217

E ILIFF AVE

S PARKER RD

E HARVARD AVE

E HARVARD AVE

S DAYTON WAY

27

E VASSAR DR

30

VOP Phase 4 Site

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0236G

FIRM
FLOOD INSURANCE RATE MAP
CITY AND COUNTY OF
DENVER,
COLORADO

PANEL 236 OF 300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DENVER, CITY AND COUNTY OF	080046	0236	G

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



MAP NUMBER
0800460236G

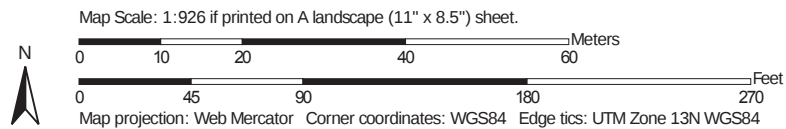
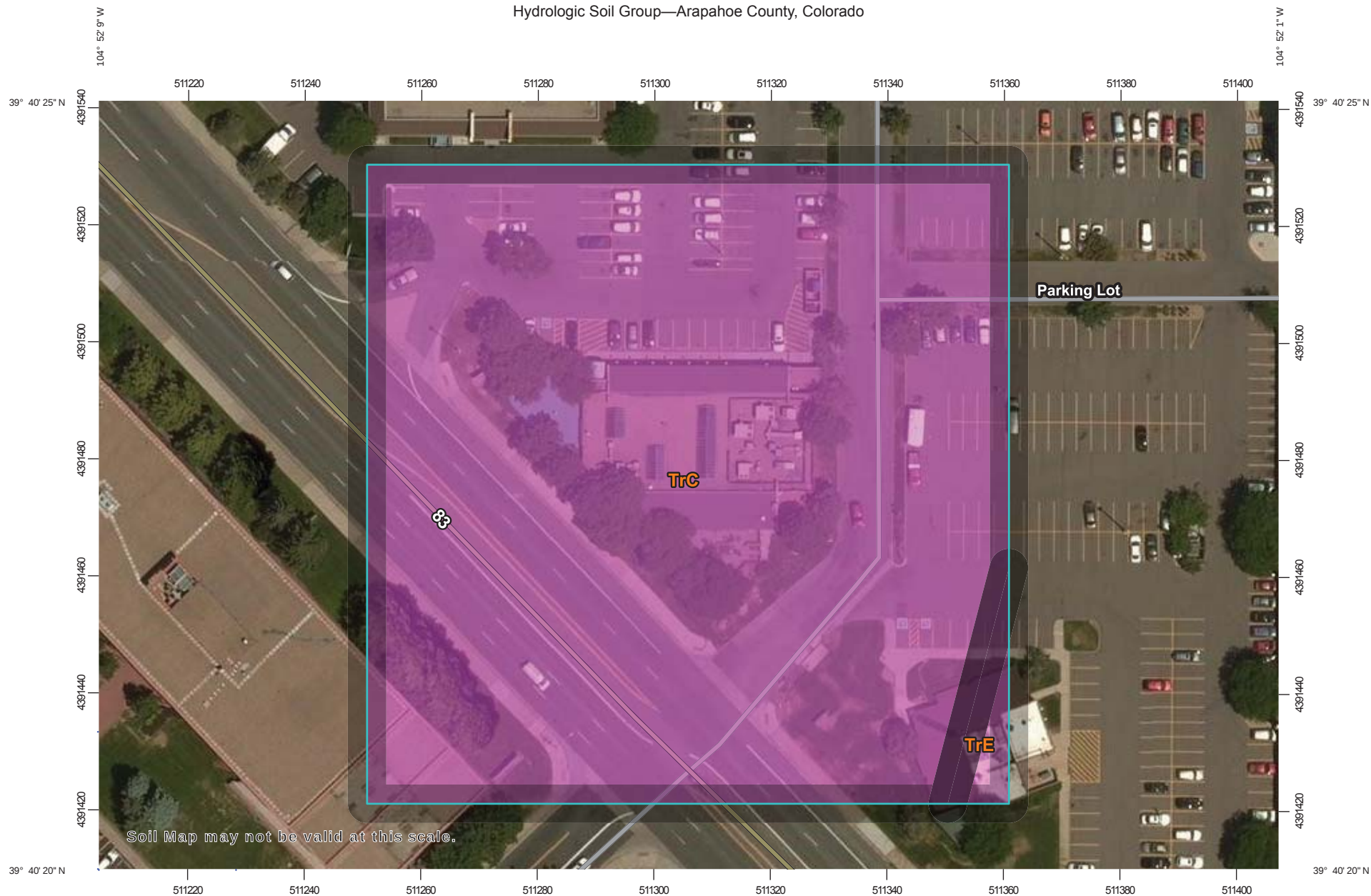
MAP REVISED:
NOVEMBER 17, 2005

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

SWMP APPENDIX B – Soils Information

Hydrologic Soil Group—Arapahoe County, Colorado



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

6/13/2017
Page 1 of 4

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Arapahoe County, Colorado
 Survey Area Data: Version 12, Sep 22, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 10, 2014—Aug 21, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Arapahoe County, Colorado (CO005)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
TrC	Truckton loamy sand, 1 to 5 percent slopes	A	2.9	98.2%
TrE	Truckton loamy sand, 5 to 20 percent slopes	A	0.1	1.8%
Totals for Area of Interest			3.0	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

SWMP APPENDIX C – Probable Cost Forms

PROBABLE BMP COST SHEETS

Standardized Probable Cost Spreadsheet for Initial BMPs

Projec VOP - DORA SITE - S. PARKER

Date: 2/20/2018

No.	BMP	ID	Unit	Installation Unit Cost	Initial / Interim Quantity	Initial / Interim Cost
1	Check Dam	CD	LF	\$ 24.00	0	\$ -
2	Compost Blanket	CB	SF	\$ 0.50	0	\$ -
3	Compost Filter Berm	CFB	LF	\$ 4.00	0	\$ -
4	Concrete Washout Area	CWA	EA	\$ 1,000.00	1	\$ 1,000.00
5	Construction Fence	CF	LF	\$ 5.00	840	\$ 4,200.00
6	Curb Socks	CS	EA	\$ 20.00	20	\$ 400.00
7	Diversion Channel	DC	EA	\$ 2,000.00	0	\$ -
8	Diversion Dike	DD	LF	\$ 1.50	0	\$ -
9	Dewatering	DW	EA	\$ 600.00	0	\$ -
10	Erosion Control Blanket	ECB	SY	\$ 5.00	0	\$ -
11	Inlet Protection - All types	IP	EA	\$ 300.00	1	\$ 300.00
12	Outlet Protection	OP	EA	\$ 250.00	0	\$ -
13	Reinforced Check Dam	RCD	LF	\$ 36.00	0	\$ -
14	Rock Socks	RS	LF	\$ 10.00	0	\$ -
15	Rough Cut Street Control	RCS	EA	\$ 50.00	0	\$ -
16	Sediment Basin	SB	CY	\$ 3.00	33	\$ 99.00
17	Sediment Control Log	SCL	LF	\$ 3.00	0	\$ -
18	Sediment Trap	ST	EA	\$ 600.00	0	\$ -
19	Seeding & Mulching (Less than 10 Acres)	SM	AC	\$ 2,500.00	0	\$ -
	(Greater than 10 Acres)	SM	AC	\$ 1,500.00	0	\$ -
20	Silt Fence	SF	LF	\$ 2.00	425	\$ 850.00
21	Silt Fence - Reinforced	SF-R	LF	\$ 4.00		\$ -
22	Stabilized Staging Area	SSA	SY	\$ 2.00	290	\$ 580.00
23	Surface Roughening	SR	AC	\$ 600.00	0.12	\$ 72.00
24	Temporary Slope Drain	TSD	LF	\$ 25.00	0	\$ -
25	Temporary Stream Crossing	TSC	EA	\$ 1,500.00	0	\$ -
26	Terracing	TER		\$ -	0	\$ -
27	Tree Protection Fencing	TP	LF	\$ 5.00	7	\$ 35.00
28	Vehicle Tracking Control	VTC	EA	\$ 1,000.00	1	\$ 1,000.00
29	VTC with Wheel Wash	WW	EA	\$ 1,500.00	0	\$ -
30	Mobilization (required on all projects)	MB	LS	\$ 5,000.00	1	\$ 5,000.00
31	Pond Maintenance/Sediment Removal (Based on area tributary to the pond)	PM	AC	\$ 1,000.00	0.25	\$ 250.00
32	Street Maintenance (Based on lane miles of streets within project and adjacent to project)	STM	LM	\$ 1,500.00	0.05	\$ 75.00
33	Other: _____			\$ -		\$ -
Subtotal Cost of Initial BMPs						\$ 13,861.00
34	Maintenance (required on all projects)		%	25% of Subtotal		\$ 3,465.25
Total Cost of Initial & Interim BMPs						\$ 17,326.25
Fiscal Security Amount						\$ 3,465.25

* For Temporary Batch Plant BMPs allow \$5000.00 in line 32.

** Fiscal Security required is the higher amount of either the Initial or the Post-Paving, not both.

PROBABLE BMP COST SHEETS

Standardized Probable Cost Spreadsheet for Post Paving BMPs

Project Name: _____ VOP DORA SITE Date: 2/20/2018 _____

No.	BMP	ID	Unit	Installation Unit Cost	Initial / Interim Quantity	Initial / Interim Cost
1	Check Dam	CD	LF	\$ 24.00	0	\$ -
2	Compost Blanket	CB	SF	\$ 0.50	0	\$ -
3	Compost Filter Berm	CFB	LF	\$ 4.00	0	\$ -
4	Concrete Washout Area	CWA	EA	\$ 1,000.00	0	\$ -
5	Construction Fence	CF	LF	\$ 5.00		\$ -
6	Curb Socks	CS	EA	\$ 20.00	10	\$ 200.00
7	Diversion Channel	DC	EA	\$2,000	0	\$ -
8	Diversion Dike	DD	LF	\$ 1.50	0	\$ -
9	Dewatering	DW	EA	\$ 600.00	0	\$ -
10	Erosion Control Blanket	ECB	SY	\$ 5.00	565	\$ 2,825.00
11	Inlet Protection - All types	IP	EA	\$ 300.00	1	\$ 300.00
12	Perimeter Erosion Control BMPs (Lot)	PC	EA	\$ 500.00	0	\$ -
13	Outlet Protection	OP	EA	\$ 250.00	0	\$ -
14	Reinforced Check Dam	RCD	LF	\$ 36.00	0	\$ -
15	Rock Socks	RS	LF	\$ 10.00	0	\$ -
16	Sediment Basin	SB	CY	\$ 3.00	0	\$ -
17	Sediment Control Log	SCL	LF	\$ 3.00	0	\$ -
18	Sediment Trap	ST	EA	\$ 600.00	0	\$ -
19	Seeding & Mulching (Less than 10 Acres)	SM	AC	\$ 2,500.00	0.27	\$ 675.00
	(Greater than 10 Acres)	SM	AC	\$ 1,500.00		\$ -
20	Silt Fence	SF	LF	\$ 2.00	0	\$ -
21	Silt Fence Reinforced	SF-R	LF	\$ 4.00	0	\$ -
22	Stabilized Staging Area	SSA	SY	\$ 2.00	136	\$ 272.00
23	Surface Roughening	SR	AC	\$ 600.00	0	\$ -
24	Temporary Slope Drain	TSD	LF	\$ 25.00	0	\$ -
25	Temporary Stream Crossing	TSC	EA	\$ 1,500.00	0	\$ -
26	Terracing	TER		\$ -	0	\$ -
27	Tree Protection Fencing	TP	LF	\$ 5.00	7	\$ 35.00
28	Vehicle Tracking Control	VTC	EA	\$ 1,000.00	0	\$ -
29	VTC with Wheel Wash	WW	EA	\$ 1,500.00	0	\$ -
30	Mobilization (required on all projects)	MB	LS	\$ 5,000.00	1	\$ 5,000.00
31	Pond Maintenance/Sediment Removal (Based on area tributary to the pond)	PM	AC	\$ 1,000.00	0.25	\$ 250.00
32	Street Maintenance (Based on lane miles of streets within project and adjacent to project)	STM	LM	\$ 1,500.00	0.05	\$ 75.00
33	Other: _____			\$ -		\$ -
Subtotal Cost of Post Paving BMPs						\$ 9,632.00
34	Maintenance (required on all projects)		%	25% of Subtotal		\$ 2,408.00
Total Cost of Post Paving BMPs						\$ 12,040.00
Fiscal Security Amount						\$ 2,408.00

Note: Do not include costs for BMPs carried over from the Initial Plan, only new installations

* For Temporary Batch Plant BMPs allow \$5000.00 in line 32.

** Fiscal Security required is the higher amount of either the Initial or the Post-Paving, not both.

SWMP APPENDIX D – Calculations

Sediment basin calculations are attached. Please note that the size of the sediment basin is 900-cf calculated per UDFCD standards. The detention pond size is 978-cf. Given the similarity in size the erosion control plans call for the contractor to construct the sediment basin per the pond grading sheet C2.1 in the construction documents. This is due to the fact that the proposed detention pond is required to replace a small volume of rooftop detention being removed and does not account for water quality nor sized for EURV. The design requires a minimum riser pipe orifice of 0.18-inches. Since this is relatively small and prone to clogging the minimum diameter provided in UDFCD Table SB-1 for general sizes of sediment basins equal to or less than one acre is used. The diameter is 9/32-inches.

LOT 2 BLOCK 1 VILLAGE ON THE PARK SEDIMENT BASIN AND RISER PIPE CALCULATION

SEDIMENT BASIN ID	TOTAL DISTURBED AREA (AC.)	VOLUME REQUIRED (3600 CF/ ACRE)	DEPTH (FT)	TOP LENGTH (FT)	TOP WIDTH (FT)
SB	0.25	900	4.1	42	21

* SEE SHEET PLAN SET FOR TEMPORARY AND PERMANENT POND DETAILS

*ASSUME 3:1 SLOPES

SEDIMENT BASIN VOLUME CALCULATION - SEE UDFCD STAGE STORAGE SIZING SHEETS ATTACHED

SEDIMENT BASIN WQCV STAGE DISCHARGE RATE AND ORIFICE SIZING - SEE UDFCD STAGE DISCHARGE FOR WQCV SHEETS ATTACHED

VARIABLE RESULTS PER STORAGE CALCULATION (FIGURE SO-8)	
EURV (use 10-yr since EURV N/A)	0.0043
H	1.5
b	0.15933
c	0.99535

CALCULATED AREA (FIGURE SO-8)		
A (in^2)	AREA	0.02649255
R (in)	RADIUS	0.09183049
D (in)	DIAMETER	0.18366099

SEDIMENT BASIN AND RISER PIPE CALCULATIONS SUMMARY	
TOTAL DISTURBED AREA (AC.)	0.25
VOLUME REQUIRED (3600 CF/ ACRE)	900
NUMBER OF SEDIMENT BASINS	1
AC-FT PER SEDIMENT BASIN REQUIRED	0.021
SLOPE OF BASIN	3 TO 1
DEPTH OF VOLUME	4.1
ORFICE SPACING FROM C-C	4 in
AREA PER ROW OF ORFICES (in ²)	0.026
TIME TO DRAIN	72 hrs
HOLE (ORIFICES) PER ROW	1
CALCULATED DIAMETER	.18 in
MINIMUM DIAMETER per UDFCD Table SB-1 (>1-AC)	9/32 in
RECOMMENDED DRILL BIT	9/32 in
RECOMMENDED RISER PIPE DIAMETER	6 in

SWMP APPENDIX E – Variance Request Details

SWMP APPENDIX F – Vertical and General Construction Matrix

Vertical and General Construction Concern	BMP Measures	Information Provided by:	Approved by (COA Employee):
Provide a mixing station detail/area for masonry/brick. If the site is going to bring in silos for masonry mixing, wind protection will be required to minimize the maximum extent practicable the dust from impacting adjacent buildings and streets.			
Saw cutting station detail/area (must address slurry waste)			
Tool Cleanup BMPs and Practices			
Procedural BMPs for clean up in the above areas and clean up if spills should occur as traveling to the building area			
Options for handling paints, solvents, glues (i.e. utilize the CWS or provide alternative)			
Provide physical and procedural BMPs for clean up along the building during the installation of brick, stone or stucco (strike zone and scaffolding impacts to BMPs)			
Access may be required around the building, defining a haul route may be necessary and denote stabilization needs on this proposed haul route (cranes)			

Address access to the building as different stages of vertical construction occur. For example, a VTC may work for the duration of the infrastructure construction but as the grading is fine tuned, different measures may need to be implemented to limit access or be more mobile. Controlling access is important during vertical construction, especially when taking access from an impervious surface (i.e. pavement).			
Staging areas change during construction regularly. Therefore, if “con/conex” boxes are to be utilized and if they are to include liquid pollutants, then a redundant BMP measure must be provided			
Site drainage will need to be maintained during vertical construction. Review conditions to ensure that it will continue to work as shown during the grading/utility timeframes.			
Provide redundant BMPs for generators to protect from fuel/hydraulic leaks			
Utility Installation BMPs			
Waterproofing BMPs and procedures			

Review the down gradient BMPs within the impervious areas to ensure that conveyances, inlets and outlets are protected appropriately during each phase.			
Areas of disturbance outside of the building envelope shall still require BMPs review the timing/phasing of the project to ensure the appropriate BMPs are implemented as construction continues.			
BMPs for keeping impervious surfaces clean may need to be enhanced or added to as construction continues.			
Provide redundant BMPs for mobile concrete washouts and policies for cleanup of blobs of concrete by trades			
Review and implement BMP measures to control roof drainage. This becomes a point source and may cause extensive erosion on site.			
Address waste handling procedures for drywall, painters, carpet layers etc.			
Provide BMPs for delivery trucks – i.e. controlled access points, staging areas, delivery areas, parking area.			
Coordination Plan – required if different phases of work is to be done by different general contractors (i. e. road work vs. building façade)			

Details and BMP measures for form oil and form oil laydown area			
Run on modifications			
Interim lot stabilization techniques			
The methods to be used to address the following issues:			
▪ Irrigation testing			
▪ Water main/fire line testing			
▪ Sewer line testing			
▪ Building washing			

▪ Graffiti deterrent application			
▪ Fire retardant application			
▪ Fueling			
▪ Process water (paving rollers, boring equipment, wet saws, etc)			