# Table B.1City of AuroraCommunity Data Collection - Stormwater Management Plan - Phase 1

Contact: URS Corp., John Griffith (303) 796-4696, Greg Murphy (303) 730-0434

		Importance to Managing	Importance		Data 1	Format	Location (If not on a web site) where	Map to 10 Step Process
	Documents	Flood Risk $(1-5)$ $(1-5)$		Digital	Paper Only	Web Site	does document reside?)	Steps
	Studies/Reports							
1	Major Drainageway/Outfall Systems Plans (16)	5, 3, 5	5, 5, 5	х	х	UDFCD	PW/AW Eng.	2,3,7,8
2	Flood Hazard Area Delineation Studies	5, 5, 5	5, 3, 5	х	Х	UDFCD	PW	2
3	Flood Insurance Studies	5, 4, 5	5, 1, 5	х	Х	UDFCD, FEMA	PW	2,4,6
4	Development Drainage Master Plans (16)	4, 2	4, 4			Oracle	PW	1,2,7
5	Development Drainage Design Reports (1700)	5, 1	5, 2	х	х	Oracle	PW	1,2,7
6	Record Drawings	4	4	х	?		?	1,2,3,4
7	Concrete Channel Study	5	5		Х		SW OPS	1,2,3,4
	Contracts/Agreements							
1	Intergovernmental Agreements (14)	4, 5, 3	5	х	х	COA – AW- others	Shared drives	7, 8, 9
2	Maintenance Agreements	4, 4, 3	4	?	?	COA – AW- others	Shared drives	7
3	Development Agreements (23)	3, 1,	3	?	?		ODA	1, 2, 7
	Maintenance							
1	Channel inspection / maintenance Reports	5	5	Yes		N/A	Hansen MMS	7
2	Pond inspection / maintenance Reports	5	5	Yes		N/A	Hansen MMS	7
3	Inlet inspection/cleaning Reports	5	5	Yes		N/A	Hansen MMS	7

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	Decuments	Importance to Managing	Importance		Data l	Format	Location (If not on a web site) where	Map to 10 Step Process
	Documents	Flood Risk (1 – 5)	(1 – 5)	Digital	Paper Only	Web Site	does document reside?)	Steps
4	Easement / tract inspection/ cleaning Reports	5	5	Yes		N/A	Hansen MMS	7
5	Pipeline inspection / Cleaning Records	5	5	Yes		N/A	Hansen MMS	7
6	Outfall inspection/cleaning Reports	5	5	Yes		N/A	Hansen MMS	7
7	Manhole inspection / cleaning Reports	5	5	Yes		N/A	Hansen MMS	7
8	Sediment Removal-projects Reports	5	5	Yes		N/A	Hansen MMS	7
9	Incident Response reports	3	4	Yes		N/A	Hansen MMS	7
10	Erosion Control Dam inspection reports	5	5	Yes			SW Ops	7
11	Levee inspection reports	5	5	Yes			SW Ops	7
	R.O.W. & Easements							
1	Drainage Easements (35)	4	3	?	?		PW, IT, GIS	1,6
2	Utility Easements (77)	4	3	?	?		PW, IT, GIS	1, 6
	Permits							
1	NPDES (State and Local)	5	5	?	?		AW- Environmental	2, 4, 5, 6
2	404 Permits						Corps of Engineers, Proj. Files	
	Stormwater Asset Files							
1	SW Map book	5	5	Yes			SW Ops – AW eng	1, 4, 7
2	Hansen Files	5	5	Yes			SW Ops – AW eng	1, 4, 7
3	Hansen 8.2.2	3	3			http://hansenweb /hansen/	Cross-linked to GIS	1, 4, 7

# Table B.1City of AuroraCommunity Data Collection - Stormwater Management Plan - Phase 1

Contact: URS Corp., John Griffith (303) 796-4696, Greg Murphy (303) 730-0434

	Documents Importan to Manag		nportance Managing to this Study		Data I	Format	Location (If not on a web site) where	Map to 10 Step Process
	Documents	Flood Risk (1 – 5)	(1 – 5)	Digital	Paper Only	Web Site	does document reside?)	Steps
	Environmental Studies, Reports, Files							
1	Integrated Stream Corridor Mgmt. Plan	3	3	Х				5, 6, 7, 8
	Funding							
1	UDFCD Master Plans (5-yr UDFCD budgets)	5	5				AW/PW	2, 3, 5, 6, 7, 8
2	Capital Plans AW	5, 5	5, 5	Yes			AW	7, 8
3	Budgets AW - yearly	4, 3	5, 5	Yes			AW	7, 8
4	Benchmarking Studies	3	3				PW	7, 8, 9
5	Asset Management Plans	3	3				AW – Eng., Beginning to collect data for this	1, 2, 3, 4, 5, 6, 7, 8, 9,10
	Emergency Response							
1	Incident Response – spills etc.	2	5	Yes			Hansen MMS	5, 6
2	Flood Response Plan	5	5	Yes			SW Ops	5,6
	Manuals							
1	Kelly Road Dam O&M	5	5	Yes			AW	5,7
2	COA Dam O&M	5	5	Yes			AW	5,7
3	Levee Sand Creek	5	5					5,7
	Other							
1	Private Pond (post-ordinance – 2008)	3	4	Yes			AW OPS	1, 2, 7, 9
2	Private Pond (pre-ordinance)	3	4	Yes			AW OPS	1, 2, 7, 9

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Auroi Progr Plan Use C	Key:         1 = High         2 = Med         2lan         3 = Low         4 = Not Applicable         Use Case Prioritization         NE = No expertise         Rows highlighted in green are high priority use cases with an average priority between 1 and 2								
		Responder:	Nicole Johnston	Clint Wiesz	Larry Rector	Sean Lieske	Vern Adam	Bill McCormick	Average Priority:
Navig	Navigation								
	User selects a geog	raphical location by clicking on a map.	1	1	1	1	2	1	1.166667
	User selects multip	le locations by outlining an area on a map.	2	1	1	1	3	2	1.666667
	User selects a location or locations by entering text (address, intersection, subdivision, stream name, or watershed).		1	1	1	2	2	2	1.5
	User selects layers which contain categories of data for locations on the map.		1	1	1	4	1	2	1.666667
	User browses a page describing the stormwater program in sections with links to relevant documents/data.		1	2	1	1	3	4	2
	User selects one or them on a map.	more items (streams, assets, etc.) and views	1	1	1	2	2	2	1.5
	A user selects locat documents/data fro	ion(s) on a map, and can view m a variety of categories of information.	1	1	1	1	1	2	1.166667
Storm	water Assets and E	lements							
	User reviews the re asset, which could videos.	ported existing conditions of a stormwater include text, documents, photos, reports, or	2	2	1	1	3	4	2.166667
	User reviews the current inspection reports for stormwater asset, which could include text, documents, photos, reports, or videos.		2	3	1	1	2	4	2.166667
	User locates existin construction, which	g stormwater assets and those that are under are highlighted and clickable.	1	2	1	1	3	3	1.833333
	User locates a pond another entity.	and verifies whether it belongs to Aurora or	2	1	1	2	3	3	2
	User selects a storn asset, such as maint etc.	water asset and reviews details about that tenance activity, condition, record drawing,	1	2	1	1	1	4	1.666667

Table B.2Use Case Survey Responses

Auror Progr Plan Use C	ra Stormwater am Management ase Prioritization	Key:1 = High2 = Med3 = Low4 = Not ApplicableNE = No expertiseRows highlighted in green are high priority to	use cases witl	1 an average p	priority betwe	en 1 and 2			
		Responder:	Nicole Johnston	Clint Wiesz	Larry Rector	Sean Lieske	Vern Adam	Bill McCormick	Average Priority:
	User reviews an asset or map to determine where to place sandbags to protect the stormwater system from a hazardous spill.		3	3	1	3	4	4	3
	Aurora employee locates a pond to determine the last time it was maintained (such as mowing or dredging) and when the next maintenance is due.		2	2	1	1	3	4	2.166667
	User reviews drainage studies and citizen drainage complaints for stormwater assets within a specific location. Views drainage problem areas.		2	1	1	1	2	4	1.833333
	User selects a storm condition assessme	nwater asset and can view video of CCTV nt.	3	2	1	3	3	2	2.333333
	User locates a cons	truction permit for a specific location.	2	3	NE	2	4	4	3
	User reviews a dash maintenance activit location.	board showing open work orders and/or ies for the day, week, month, or for a	2	2	NE	4	3	4	3
	User determines if which a citizen rep	open permits are in effect near a location at orts an issue.	1	3	NE	2	3	4	2.6
	Staff locates license which pertain to rai	e agreements and other business documents lroads and the Air Force Base.	3	3	NE	3	4	3	3.2
	Aurora employee solution with impli	earches for all current construction sites in a cations for stormwater quality.	2	2	NE	1	3	4	2.4
	Customer calls Acc dam in the creek by determine whether	tess Aurora with a complaint about a beaver their house. User checks the location to the issue has been logged as a work order.	2	2	NE	2	3	4	2.6
	Aurora staff indicat orders.	tes an area on the map and views open work	1	2	NE	1	2	4	2
	Staff selects an add actions.	ress/asset and views list of all enforcement	2	1	NE	1	3	4	2.2
	Staff assigns a work is nearest the location	k order to the code enforcement officer who on.	3	4	NE	3	4	4	3.6

Table B.2Use Case Survey Responses

Aurora Stormwater       Key:         Program Management       1 = High         Plan       2 = Med         Use Case Prioritization       NE = No expertise         Rows highlighted in green are high priority use cases with an average priority between 1 and 2									
Responder:			Nicole Johnston	Clint Wiesz	Larry Rector	Sean Lieske	Vern Adam	Bill McCormick	Average Priority:
	Staff locates liquor within Aurora.	licenses and tax information for businesses	4	4	NE	3	4	4	3.8
	Employee selects a video(s) on O&M t	n asset or asset type and views training asks.	3	3	NE	3	4	4	3.4
	User views 10-year stormwater capital improvement projects as pinpointed locations on a map through which they can access additional details.		1	2	NE	1	2	3	1.8
	A new developer wants to build in Aurora. Aurora staff reviews water quality and stormwater asset data in the location to determine if the infrastructure can support the new project.		4	3	NE	3	2	1	2.6
	Aurora staff selects permits and inspect regulations.	a layer to view all active stormwater quality ion reports to ensure compliance with	1	2	NE	1	1	4	1.8
	Aurora employee re area.	eviews MS4 permit program details for an	4	3	NE	4	3	2	3.2
	User views wetland	l areas within Aurora.	3	1	NE	2	4	2	2.4
Issues	;								
	Aurora employee so drainage and floodi	earches for citizen complaints regarding ng in a certain area of the city.	2	1	NE	3	1	2	1.8
	Citizen reports a backed-up storm sewer and the employee reviews the location for existing work orders to fix the problem.		1	1	NE	1	2	4	1.8
	Staff reviews recent reported issues as pinpoints on a map to identify problematic areas.		2	1	NE	1	1	4	1.8
	Citizen complains a the Aurora employe area and whom to f	about construction pollution in a stream and ee identifies construction activities in the follow up with.	1	1	NE	3	2	4	2.2
	Staff reviews respo	nse metrics over various periods of time.	2	2	NE	4	3	4	3

### Table B.2Use Case Survey Responses

Aurora Stormwater Program Management Plan Use Case Prioritization	Key:1 = High2 = Med3 = Low4 = Not ApplicableNE = No expertiseRows highlighted in green are high priority to	use cases with	h an average j	priority betwee	en 1 and 2			
	Responder:	Nicole Johnston	Clint Wiesz	Larry Rector	Sean Lieske	Vern Adam	Bill McCormick	Average Priority:
Other	Other							
User searches for d list of results.	ocuments/data in non-map based page with a	1	2	NE	NE	2	1	1.5
User reviews a das orders, maintenanc	User reviews a dashboard of stormwater activity: floods, work orders, maintenance, construction, complaints, etc.		2	NE	2	2	4	2.2
For an Aurora local details pertaining to and other facilities	For an Aurora location, users can also review assets and project details pertaining to roads/streets, wastewater, drinking water, and other facilities along with stormwater data.		2	NE	2	4	1	2.6
Aurora employee s location with impli	Aurora employee searches for all current road projects in a location with implications for stormwater quality.		1	NE	3	3	4	3
Staff views a flag or scheduled for a sing conflicting work or that a pond should also scheduled for o	Staff views a flag on dashboard for multiple work orders scheduled for a single asset and determines whether there are conflicting work orders. For example, one work order indicates that a pond should be mowed, and another indicates that it is also scheduled for dreading, which should be performed first		1	NE	1	2	4	2
Staff views timelin better coordinate w project planned in 2 planned in 2 years)	Staff views timeline of planned projects for an area/asset to better coordinate with other departments (i.e. parks may have a project planned in 3 years that is similar to a water project planned in 2 years).		1	NE	1	3	4	2.2
A new employee re system as a method with their role, whi knowledge between	eviews the information available through the I to get up to speed with tasks associated ch facilitates the transfer of institutional n employees.	1	3	NE	3	3	3	2.6
Users can review li ongoing basis (See	nked non-Aurora owned documents on an systems diagram/listing).	1	3	NE	3	3	1	2.2
User views current	sewer and water bonds.	4	4	NE	3	4	4	3.8

Table B.2Use Case Survey Responses

Aurora Stormwater Program Management Plan Use Case Prioritization	Key:1 = High2 = Med3 = Low4 = Not ApplicableNE = No expertiseRows highlighted in green are high priority	use cases wit	h an average j	priority betwe	en 1 and 2			
Responder:			Clint Wiesz	Larry Rector	Sean Lieske	Vern Adam	Bill McCormick	Average Priority:
New					· · ·			
Environmental – select a sample point and highlight all streams and pipes which contribute to that point location (Geometric Network) Map				1				1
Include county p ownership) Map	arcel layer with link to county data (like			1				1
Select all parcel	of interest and export list to spreadsheet. Map			1				1
Stormwater permit inspection reports accessible by clicking on a specified permit location					1			1
Dashboard that shows CIP recommendations for next year, 5- years, 10-years based on specified factors such as risk, complaints, inspections, etc.					1			1
Allow a dashboa	rd with options defined by each individual user				1			1

Table B.2Use Case Survey Responses

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	Questions 1 – 6		R	esponses	
	Background	Clint Weisz	Donelson, McCleary	Van Ry	McCormick
1	Describe your responsibilities with respect to Aurora's current Stormwater Program.	Involved in major drainageway planning and project management for CIP.	My responsibilities include: oversight of all Stormwater Operations and Maintenance, UDFCD CIP, Maintenance and Master Planning coordination, and Municipal Separate Storm Sewer (MS4) compliance.	I am responsible for all master plans once completed. I will ultimately be responsible for the maintenance and upkeep of this plan once completed. I manage the plans reviewers that review all stormwater and erosion control plans for Aurora Water. I manage a developer related stormwater inspections through an inspections team I manage all cost shares with developers. I provide engineering input for the development of rates and fees. My group provides engineering input for operational stormwater issues. I am responsible for Aurora Water Asset Management and GIS.	Floodplain management and FEMA submittal reviews, drainage plan and reports reviews for general conformance with City criteria, technical support for UDFCD's master planning projects.
2	What is your vision for this Stormwater Management Plan? What are your expectations and how will project success be measured?	The plan will help us organize, track and file stormwater information as well as plan, chart and fund future priorities.	My vision for the SWMP is to have a planning and decision making tool that incorporates: Capital project identification, planning, prioritization, UDFCD CIP, Maintenance and planning, key maintenance integration, (sediment removal). In my opinion success will be measured when all key components of the SW program are in a format that is user friendly, flexible, adaptable, and is robust and will serve AW well into the future. Record keeping tool.	A comprehensive guidance document and associated support documents/programs that brings together all stormwater elements and outlines a strategic approach to managing the stormwater program. The document should be in a format that can be readily updated annually with a major update every 5 years. There also needs to be a strategic approach to 1, 5, 10, & 20 year CIP updates. The document should provide the foundational information required to support appropriate stormwater rates and fees. A centralization and coordination of stormwater activities is a goal. A clear definition of roles and responsibilities should be outlined in the document.	Have one data base having the storm sewer system info, drainage studies info (both private and public studies), drainage complaints data in one location, etc. In regard to expectations I do not know the project budget, but eventually I think this project should be fully operational where it is GIS based where staff could look at an area and see all existing infrastructure and studies, etc. Project success will likely be measured in stages: basic data collection, GIS data input, "vehicle" for use of the GIS data base. This "vehicle" needs to be accessed by all City staff, not just Aurora Water Department staff.
3	What are your principal issues or concerns (flooding, lot drainage, water quality, capital needs, maintenance needs, etc.)?	Drainageway planning and capital needs.	Principal issues and concerns: water quality, capital needs and planning, timely maintenance, environmental compliance	Program financial sustainability. Capital program planning. Strategic approach to management of the SW utility.	Drainage problem areas, gaps in the studies we have, including whether the existing studies are becoming outdated and need to be updated.
4	What other City agencies do you work with in accomplishing your stormwater responsibilities?	Primarily Operations, Public Works and PROS but also utilities, erosion control, planning, traffic, permitting, attorney's office, real property, survey business services and purchasing	AW engineering, PW Floodplain engineering and application	Public Works, Development Services, City Manager's Office, Finance Department, Legal Department, Parks Recreation and Open Space, Council.	Aurora Water, City Attorney's Office, Real Property Division of Public Works, Design Engineering Division of Public Works
5	What external organizations do you work with (e.g., Arapahoe County, Urban Drainage & Flood Control District, State of Colorado, SEMSWA, etc.)?	Urban Drainage, and SEMSWA primarily but also CDOT, Arapahoe county, Adams County, City and County of Denver, DIA, Buckley AFB, FEMA	UDFCD, Adjacent jurisdictions, FEMA (CRS program), State of Colorado, (Water Quality Control Division, WQCD) MS4 compliance., USACE, wetlands Cherry Creek Basin Authority	NPDES, State MS4 requirements, FEMA	Arapahoe County, City and County of Denver (including DIA), Adams County, Douglas County, SEMSWA, City of Centennial, UDFCD, CDOT, CWCB, FEMA, Cherry Creek Basin Water Quality Authority, U.S. Army Corps, RTD, Aurora Public School District, Cherry Creek School District, University of Colorado Health Sciences
6	What Federal, State and local regulations affect your work?	EPA on down	FEMA- CRS program, WQCD-MS4 compliance, local ordinances (COA private pond ordinance)	NPDES, State MS4 requirements, FEMA	Water Quality Act, Endangered Species Act, State's rules and regs. on regulating floodplains, laws regarding wetlands, i.e., 404 permits, FEMA regulations, Colo. Reg. 72, Cherry Creek Basin Water Quality Authority's criteria

	Questions 1 – 6		Responses	
	Background	Sean Lieske	Nicole Johnston	
1	Describe your responsibilities with respect to Aurora's current Stormwater Program.	Staff includes the City's MS4 coordinator and the erosion control inspection staff as it relates to the Stormwater Construction Sites Program requirements of the MS4 permit. More specifically, these duties are focused on ensuring compliance with the permit from a water quality perspective as opposed to a flood mitigation and/or management perspective.	Review construction plans, guide projects, review best management practices,	Supervise current
2	What is your vision for this Stormwater Management Plan? What are your expectations and how will project success be measured?	The master plan should have two main objectives: 1) Development of a master planning document that provides a prioritization process for improvements and maintenance of the stormwater conveyance system based on the triple bottom line approach of considering three main factors: economic/financial (profit); environmental (pollution); and, social (people). The environmental part of this should consider Low Impact Development techniques and the use of green infrastructure. 1a) GIS mapping system that can readily show choke points, damaged areas, impervious surfaces, planning zones, etc. that will be able to assist with future prioritization processes.	I wish it would stop being referred to as a Stormwater Management Plan since we have a requirement for a stormwater management plan (SWMP) for construction and permitting (both City and State) and it is terribly confusing. If it helps our department guide development requirements for incoming projects in the city (Master Planning) and aids interdepartmental communications it will be good.	Create Stormwat Sub-basin delinea Detention Ponds - Structures – Inlets flow Conveyance - Pip Conveyance – Siz Outfalls – Point o Floodplain – FEM Point feature – ad Hyperlink – featu Geometric Netwo Correlate borderin Deliver GIS featu
3	What are your principal issues or concerns (flooding, lot drainage, water quality, capital needs, maintenance needs, etc.)?	Lot drainage, water quality, appearance, functionality	For us all of the above are our concerns. We do our best to prevent the issues pre-development and help with correcting issues and both aspects need to involve water quality concerns.	Quality, accuracy
4	What other City agencies do you work with in accomplishing your stormwater responsibilities?	Parks, Recreation and Open Space, Public Works, Planning	Storm Drain (various groups), Public Works, CPD, Asset Mgmt., GIS, Planning, PROS	All Aurora Water
5	What external organizations do you work with (e.g., Arapahoe County, Urban Drainage & Flood Control District, State of Colorado, SEMSWA, etc.)?	Colorado Stormwater Council, Urban Drainage and Flood Control District, South Platte Coalition for Urban River Evaluation, Colorado Department of Transportation, Southeast Metro Stormwater Authority, Arapahoe and Adams Counties (Tri-County), Colorado Department of Public Health & Environment – Water Quality Control Division, Cherry Creek Basin Water Quality Authority, Chatfield Watershed Authority, South Platte Enhancement Board, Coalition for the Upper South Platte	Those listed and Home Owners Associations, Home Builders Association	Arapahoe County Colorado, SEMS
	Regulatory Compliance			
6	What Federal, State and local regulations affect your work?	Clean Water Act, Colorado Water Quality Control Act, Phase I MS4 permitting requirements, Total Maximum Daily Loads (TMDLs) issued by the State, Regulation 72 – Cherry Creek Reservoir Control Regulation, Regulation 85 – Nutrients, Regulation 31 – Basic Standards, Rules and Regulations Regarding Stormwater Controls for Construction Sites, City Ordinances	CWA, CDPHE, City Regs and Codes	unknown

#### Larry Rector

t GIS system. Maintain GIS and all updates to the system

ter GIS using current data and new data ation (watersheds) – polygon boundary – polygon boundary with cubic feet capacity s, Culverts, Bridges, Flumes, and all features in contact with water

bes, ditches, creeks, etc.

ze & Capacity, CFS flow rate range

- of outfall, conveyance, and contributing watershed
- MA polygons of 100 year flood event ddresses within 100 year flood area
- ire to document link
- ork showing connectivity and direction of flow
- ng jurisdictions data like City of Denver, SEMSWA, and others ures in ESRI geodatabase – In COA standard coordinate system

, connectivity of current data. No link to documentation

r, Public Works Dept., IT Dept., Parks Dept.

, Adams County, Urban Drainage & Flood Control District, State of WA, DrCog, City of Denver

Questions 1 – 6	Responses				
Background	Consultant Team				
Describe your responsibilities with respect to Aurora's current Stormwater Program.	Project manager assisting with development and implementation of the PLAN.				
What is your vision for this Stormwater Management Plan? What are your expectations and how will project success be measured?	Stop referring to this project as a Stormwater Management Plan since we have a requirement for a stormwater mar and State) and it is confusing. What shall we call this project? PLAN.				
	The PLAN will help us organize, track and file stormwater information as well as plan, chart and fund future pr				
	PLAN is a comprehensive guidance document and associated support documents/programs that brings together all managing the City's stormwater program. The document should be in a format that can be readily updated annual				
	There needs to be a strategic approach to 1, 5, 10, & 20 year CIP updates.				
	PLAN should include planning / decision making tools that incorporate: 1) Capital project identification, planning maintenance integration, (sediment removal).				
	<ol> <li>A master planning document that provides a prioritization process for improvements and maintenance of approach of considering three main factors: economic/financial (profit); environmental (pollution); and, s Low Impact Development techniques and the use of green infrastructure.</li> </ol>				
	2) A centralization and coordination of stormwater activities is a goal. A clear definition of roles and respon				
	3) The document should provide the foundational information required to support appropriate stormwater ra				
	Have one data base having the storm sewer system info, drainage studies info (both private and public studies), dra				
	A GIS mapping system that can readily show choke points, damaged areas, impervious surfaces, planning zones, a				
	Create Stormwater GIS using current data and new data. A Record keeping tool.				
	A guide for development requirements for incoming projects in the city (Master Planning) and aids interdepartment				
	Success will be measured when all key components of the SW program are in a format that is user friendly, City of Aurora Stormwater Program) well into the future.				
	Project success will likely be measured in stages: basic data collection, GIS data input, "vehicle" for use of				
What are your principal issues or concerns (flooding, lot drainage, water quality,	Drainageway planning and capital needs, capital needs and planning, Capital program planning				
capital needs, maintenance needs, etc.)?	Water quality, timely maintenance, environmental compliance				
	Program financial sustainability. Strategic approach to management of the SW utility.				
	Lot drainage, water quality, appearance, functionality Prevent issues at pre-development and help with correcting				
	Drainage problem areas, gaps in the studies we have and whether existing studies are becoming outdated and need Quality, accuracy, connectivity of current GIS data. No link to documentation				

1

2

#### agement plan (SWMP) for construction and permitting (both City

ities.

stormwater elements and outlines a strategic approach to ly with a major update every 5 years.

prioritization, 2) UDFCD CIP, 3) Maintenance and planning, key

the stormwater conveyance system based on the triple bottom line ocial (people). The environmental part of this should consider

- sibilities should be outlined in the document.
- tes and fees.
- inage complaints data in one location.
- nd more that will assist with future prioritization processes.

tal communications.

flexible, adaptable, and is robust and will serve AW (or the

the GIS data base.

issues, and both need to involve water quality concerns. to be updated.

	Questions 1 – 6	Responses
4	What other City agencies do you work with in accomplishing your stormwater responsibilities?	Primarily Operations, Public Works and PROS. Also utilities, erosion control, planning, traffic, permitting, attorney
		AW Engineering, PW Floodplain engineering and application
		Public Works, Development Services, City Manager's Office, Finance Department, Legal Department, PROS, Coun
		Aurora Water, City Attorney's Office, Real Property Division of Public Works, Design Engineering Division of Pub
		PROS, Public Works, Planning
		Storm Drain (various groups), Public Works, CPD, Asset Mgmt., GIS, Planning, PROS
		All AW, Public Works, IT Dept., PROS
5	What external organizations do you work with (e.g., Arapahoe County, Urban Drainage & Flood Control District, State of Colorado, SEMSWA, etc.)?	Urban Drainage & Flood Control District, SEMSWA, Arapahoe County, Adams County, Douglas County, City and Creek Basin Water Quality Authority, Chatfield Watershed Authority, South Platte Enhancement Board, Coalition for Evaluation, Colorado Stormwater Council
		Aurora Public School District, Cherry Creek School District, University of Colorado Health Sciences
		Colorado Department of Transportation, Colorado Department of Public Health & Environment - Water Quality Co
		Buckley AFB, FEMA, U.S. Army Corps,
		Home Owners Associations, Home Builders Association
6	What Federal, State and local regulations affect your work?	EPA, FEMA- CRS program, Clean Water Act (NPDES), FEMA regulations, Endangered Species Act, laws regarding
		Colorado Water Quality Control Act Phase I MS4 permitting requirements, WQCD-MS4 compliance, Total Maximu Cherry Creek Reservoir Control Regulation, Regulation 85 – Nutrients, Regulation 31 – Basic Standards, Rules and Sites, State's rules and regs on floodplains,
		City Ordinances, local ordinances (COA private pond ordinance),

y's office, real property, survey, business services and purchasing

ncil.

olic Works

County of Denver, DIA, City of Centennial, SEMSWA, Cherry for the Upper South Platte, South Platte Coalition for Urban River

ontrol Division, CWCB, DRCOG, RTD

ng wetlands, i.e., 404 permits,

num Daily Loads (TMDLs) issued by the State, Regulation 72 – I Regulations Regarding Stormwater Controls for Construction

#### Table B.4 City of Aurora, Stormwater Management Master Plan Survey Ratings Summary

					Bill	Larry	Mark Donelson	Nicole	Pieter	Sean	Van	Vern	
Question	Responses	Min M	Max A	٩vg	McCormick Clint	Rector	/Joe McCleary	Johnsto	n Van Ry	Liesk	Ry	Adam	
Capital Improvements Planning - Importance to this Stormwater Management Plan (1-5)	6	5	5	5	5 5	5 NULL	5	5	5 NULL	5	NULL	5	
Master Planning - Importance to Managing Flood Risk (1-5)	4	5	5	5	5 5	5 NULL	5	5	5 NULL	NULL	NULL	NULL	
Master Planning - Importance to this Stormwater Management Plan (1-5)	4	5	5	5	5 5	5 NULL	5	5	5 NULL	NULL	NULL	NULL	
Dam Inspection - Importance to Managing Flood Risk (1-5)	2	5	5	5	5 NULL	NULL	5	NULL	NULL	NULL	NULL	NULL	
Floodplain Ordinance Review and Revise - Importance to Managing Flood Risk (1-5)	1	5	5	5	5 NULL	. NULL	NULL	NULL	NULL	NULL	NULL	NULL	
GIS Software Maintenance Agreements - Importance to this Stormwater Management Plan (1-5)	1	5	5	5	NULL NULL	. 5	NULL	NULL	NULL	NULL	NULL	NULL	
Floodplain Management - Importance to Managing Flood Risk (1-5)	6	4	5	4	5 5	5 NULL	5	5	5 NULL	5	NULL	4	
Capital Improvements Planning - Importance to Managing Flood Risk (1-5)	6	4	5	4	5 5	5 NULL	5	5	4 NULL	5	NULL	4	
Floodplain Management - Importance to this Stormwater Management Plan (1-5)	6	3	5	4	5 5	5 NULL	5	5	5 NULL	5	NULL	3	
Capital Improvement Budgeting - Importance to this Stormwater Management Plan (1-5)	5	3	5	4	5	3 NULL	3	8	5 NULL	5	NULL	NULL	
Capital Improvement Budgeting - Importance to Managing Flood Risk (1-5)	5	3	5	4	5 3	3 NULL	3	5	4 NULL	5	NULL	NULL	
GIS Plan Development - Importance to this Stormwater Management Plan (1-5)	3	4	5	4	4 NULL	. 5	NULL		4 NULL	NULL	NULL	NULL	
Dam Inspection - Importance to this Stormwater Management Plan (1-5)	2	4	5	4	5 NULL	NULL	4	NULL	NULL	NULL	NULL	NULL	
FEMA, FIRM Review and Revise - Importance to this Stormwater Management Plan (1-5)	2	4	4	4	4 NULL	. NULL	4	NULL	NULL	NULL	NULL	NULL	
GIS System Maintenance - Importance to this Stormwater Management Plan (1-5)	2	4	5	4	4 NULL	. 5	NULL	NULL	NULL	NULL	NULL	NULL	
GIS Mapping Maintenance - Importance to this Stormwater Management Plan (1-5)	2	4	5	4	4 NULL	. 5	NULL	NULL	NULL	NULL	NULL	NULL	
Floodplain Ordinance Review and Revise - Importance to Managing Flood Risk (1-5)	2	4	5	4	4 NULL	. NULL	5	NULL	NULL	NULL	NULL	NULL	
GIS Hardware and Software Purchases - Importance to this Stormwater Management Plan (1-5)	2	3	5	4	3 NULL	. 5	NULL	NULL	NULL	NULL	NULL	NULL	
Floodplain Ordinance Review and Revise - Importance to this Stormwater Management Plan (1-5)	1	4	4	4	4 NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	
Bridge Inspections - Importance to this Stormwater Management Plan (1-5)	1	4	4	4	4 NULL	. NULL	NULL	NULL	NULL	NULL	NULL	NULL	
GIS System Maintenance - Importance to Managing Flood Risk (1-5)	1	4	4	4	4 NULL	. NULL	NULL	NULL	NULL	NULL	NULL	NULL	
GIS Mapping Maintenance - Importance to Managing Flood Risk (1-5)	1	4	4	4	4 NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	
Bridge Inspections - Importance to Managing Flood Risk (1-5)	1	4	4	4	4 NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	
Capital Improvements Project Design - Importance to Managing Flood Risk (1-5)	6	1	5	3	4	I NULL	2	2	3 NULL	5	NULL	4	
Customer Service/Dispatch Time Taking/Logging Stormwater Complaints - Importance to Managing Flood Risk (1-5)	4	3	4	3	4 4	1 NULL	3	6	3 NULL	NULL	NULL	NULL	
Inspection, Detention/Retention Basin, Public - Importance to Managing Flood Risk (1-5)	4	2	5	3	5 NULL	NULL	4	Ļ	2 NULL	NULL	NULL	3	
Site Plan Drainage Review - Importance to Managing Flood Risk (1-5)	4	2	5	3	5 4	1 NULL	NULL		2 NULL	NULL	NULL	2	
Customer Service/Dispatch Time Taking/Logging Stormwater Complaints - Importance to this Stormwater Management Plan (1-5)	4	2	4	3	4 4	1 NULL	3	6	2 NULL	NULL	NULL	NULL	
Complaint Management - Importance to this Stormwater Management Plan (1-5)	4	2	4	3	3 4	1 NULL	2		3 NULL	NULL	NULL	NULL	
Inspection, Detention/Retention Basin, Private - Importance to Managing Flood Risk (1-5)	4	1	5	3	5 NULL	NULL	4	Ļ	2 NULL	NULL	NULL	1	
Inspection, Detention/Retention Basin, Private - Importance to this Stormwater Management Plan (1-5)	4	1	5	3	5 NULL	NULL	4	Ļ	2 NULL	NULL	NULL	1	
Inspection, Detention/Retention Basin, Public - Importance to this Stormwater Management Plan (1-5)	4	1	5	3	5 NULL	NULL	4	L	2 NULL	NULL	NULL	1	
NPDES Phase II (MS4) Permit, Management - Importance to this Stormwater Management Plan (1-5)	4	1	5	3	NULL NULL	NULL	4	Ļ	3 NULL	5	NULL	1	
Site Plan Drainage Review - Importance to this Stormwater Management Plan (1-5)	4	1	5	3	5 4	1 NULL	NULL		2 NULL	NULL	NULL	1	
FEMA, FIRM Review and Revise - Importance to Managing Flood Risk (1-5)	3	2	5	3	5 NULL	NULL	4	NULL	NULL	NULL	NULL	2	
System Inventory - Importance to this Stormwater Management Plan (1-5)	3	2	5	3	4 NULL	NULL	2	2	5 NULL	NULL	NULL	NULL	
Infrastructure Site Inspection - Importance to Managing Flood Risk (1-5)	3	1	5	3	5 NULL	NULL	3	6	1 NULL	NULL	NULL	NULL	
Inspection, Construction Site - Importance to Managing Flood Risk (1-5)	3	1	5	3	5 NULL	NULL	NULL		1 NULL	NULL	NULL	3	
Inspection, Retention Basin, Residential Subdivision - Importance to Managing Flood Risk (1-5)	2	2	5	3	5 NULL	NULL	NULL		2 NULL	NULL	NULL	NULL	
GIS Plan Development - Importance to Managing Flood Risk (1-5)	2	2	4	3	4 NULL	NULL	NULL		2 NULL	NULL	NULL	NULL	
Inspection, Retention Basin, Residential Subdivision - Importance to this Stormwater Management Plan (1-5)	2	2	5	3	5 NULL	NULL	NULL		2 NULL	NULL	NULL	NULL	
GIS Hardware and Software Purchases - Importance to Managing Flood Risk (1-5)	1	3	3	3	3 NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	

# Table B.5 General Conditions Assessment Needs for Stormwater Assets and Risks

This table lists existing stormwater asset types and general consensus on most likely risk level and failure mode for each asset type.

				MAJC	DR DRAI	NAGE \	NAYS					TRI	BUTAR	IES & L (4	ARGE S 48" AN	TORM D OVER	DRAIN :)	OUTFA	LLS			MINO	R STOR CONVE	M DRA YANCES	INAGE		STO	OTHER RMWA ASSETS	TER
High High High High probability- low consequence A Low probability- low consequence C Low probability- low consequence C Low probability- low consequence High consequence High consequence High consequence High consequence High consequence High consequence High consequence	Drop Structures and Check Structures	Channel Section and Bank Protection	Low Flow Channels	Pipe and Ditch Outfalls	Bridges	Culverts	Maintenance Access Roads, Pedestrian Trails	Levees	Regional Detention Ponds	Vegetation	Drop Structures and Check Structures	Channel Lining and Bank Protection	Low Flow Channels	Pipe and Ditch Outfalls	Pipe Systems 48" and above (RCP)	Pipe Systems 48" and above (CMP)	Outlet Protection, Energy Dissipaters	Local Detention Ponds	Water Quality BMPs	Maintenance Access	Pipe Systems < 48" (RCP)	Pipe Systems < 48" (CMP)	Storm Drainage Inlets	Non-roadway Associated Drainage Ditches	Roadway Borrow Ditches	Outlet Protection and Energy Dissipaters	Pump Stations (3)	Wetlands	Dams - Jurisdictional
	1			<b></b>																									
1. Service Life																													
2. Maintenance							_																						
3. Hydrologic & Hydraulic Standards and Criteria																													
4. Adjacent Land Impacts																													
5. Effective Interagency/Interdepartmental Coordination						_		_			_															_			
6. Compliance with Conditions Specified in the MS-4 Permit											_																		
7. Managing Wetlands and Wildlife Habitat Areas							_																						
8. Managing Floodplains																													
Failure risk level (A, B, C, or D) (risk=likelihood x consequence of failure) from the above Consensus: asset condition information	С	D	А	А	с	с	В	с	с	A	с	D	А	А	с	D	С	В	В	В	А	В	В	А	A	A	D	A	С
Confidence rating (0-5) of asset type condition information OPS	: 4	4	4	4		3	4	5	4	3	4	4	4	4	4	2	4	2	3	3	4	2	4	4	3	4	4		
with 5 = 100% CP	:						3	5	4	1																			

#### Table B.6 Drainage Basin Risk Levels

UDFCD Basins Within the	ure risk level 3, C, or D)	rrox. number of -basins	
City of Aurora	Fail (A, I	App sub	Describe known deficiencies and problem areas.
Antelope Creek		5	As development occurs in this basin the creek will need to be stabilized in accordance with the Piney Creek MDP. There may be a regional detention pond around E-470.
Bear Gulch		24	Outside of current maintenance program
Box Elder Creek (Upper)		29	UDFCD's master plan shows the use of levees to control spill, Outside of current maintenance program
Cardboard Gulch		0	Outside of current maintenance program
Cherry Creek	D	35	Creek is in transition between aggradation and degradation. Aurora's responsibility for its grade control structures are needed. I think this may already be underway. Multi-jurisdictional responsibilities. Recent problems, risk to supply line form Rampart.
Coal Creek	С	36	Relatively stable at the moment. Several existing road crossings are undersized for future conditions. Undergoing current MDP.
Corner Drainage		0	Outside of current maintenance program
Coyote Run		23	Outside of current maintenance program
Crooked Run		13	Outside of current maintenance program Some reaches are heavily incised around the Centre Hills Golf Course. The Airport Boulevard crossing is believed to overtop in a major event. Ageradation has occurred unstream from its confluence with West Toll Gate Creek. This notentially will cause aidacent development to be flooded
East Toll Gate Creek	С	50	Aggradation has occurred upstream norms connuence with west for date creek. This potentially will cause ajuacent development to be nooced during a major event. Undergoing current MDP.
First Creek	В	61	Existing conditions flow is too high for existing crossings at I-70 and downstream from there. Also, the City is not in compliance with its IGA with Denver for flow rates into Denver. Aurora Water is currently working on acquiring property for regional detention pond(s) upstream of I-70 to improve this situation. Will need to look at the MDP to see if there are any issues with First Creek's tributaries (i.e., Tributary T, etc.). Current CIP project to address D/S flow limits to Denver.
First Creek Tributary T	с	35	See First Creek's comments. Current CIP project to address D/S flow limits to Denver.
Granby Ditch	D	10	Recent project per MDP increased LOS to 100-yr, hundreds of properties removed from Floodplain.
Grizzly Run		0	Outside of current maintenance program
Henry David Draw		3	Outside of current maintenance program
Irondale Gulch		12	Need to complete the Bolling Drive Tributary channel construction from just upstream of 38th Avenue to the Majestic Commercenter's detention pond IG B. Currently Pond IG B is functioning as a retention pond. It needs to be connected to the Bolling Drive Tributary. Outside of City Jurisdiction - Denver.
Llama Draw		0	Outside of current maintenance program
Meadowood Drain	С	16	Maintenance related, debris/sediment loading.
Montbello Drainage	_	6	Outside of City Jurisdiction - Denver.
Murphy Creek	C	40	Risk to City golf course and development.
Mutchie Creek		8	Outside of current maintenance program
Newcomb Gulch		4	Outside of current maintenance program
No Name Creek	В	15	The Flanders Street crossing just north of Hampden Avenue needs to be stablized. Currently, bank erosion is currently taking place, especially with larger storm events.
Patton Creek		8	Warnenance reaced, deutspace program
Piney Creek	В	22	Maintenance related, debris/sediment loading. Project in progress.
Prairie Dog Draw		29	Outside of current maintenance program
- Rat Run		n	Outside of current maintenance program
Sable Ditch	P	10	Parant projects par MDB increased LOS to 100-ur. Hundrads of proparties removed from Elegablein
Saddle Rock Ranches	D	10	As the Rockingfores development builds out the guich will require channel stabilization measures.
Sampson Gulch	с	9	As development occurs this gulch will require stabilization and a regional detention pond.
Sand Creek	с	76	Moderate level of maintenance required to this point. On-going maintenance for sediment loading. Pick to Sand Creak discharge
Second Creek		37	As this basin develops the recommendations in the MDP need to be implemented. Outside of current maintenance program
Senac Creek	С	39	Moderate level of mainteance required to this point. Risk to Binney discharee.
Third Creek		4	Outside of current maintenance program
Toll Gate Creek	С	20	On-going maintenance for sediment loading.
West Fork Second Creek		5	- Outside of current maintenance program
West Sand Creek		2	Outside of current maintenance program
West Toll Gate Creek	С	60	On-going maintenance for sediment loading.
Westerly Creek	B, D	59	Higher risk 2010 MDP - current project to remove 48 structures from the floodplain, still 50+ in floodplain. Highly visible - re-development in and around Lowry & Stapleton.
Windmill Creek	D	17	Low level of maintenance required to this point.



#### **Preliminary Use Cases**

A use case is a description of how users would perform tasks within the proposed web solution. They are a convenient way to illustrate general functionality and scope by describing the steps a user might take to reach a goal and how the web solution would respond to the user actions.

The following preliminary use cases were collected informally during the ASWPMP discovery meetings. We need your help verifying and prioritizing this list:

- 1. First, enter your name here : Type Your Name Here
- 2. Next, click "High", "Medium", "Low", or "Not Applicable" for the use cases in the tables below. In addition, please indicate any missing use cases or comments you have.
- 3. When you're finished, save this document and return it to Clint, who will forward it to URS.

#### Navigation

	For each use case, clie	ck a priority	ranking.
User selects a geographical location by clicking on a map.	□High □Medium	□Low	□Not Applicable
User selects multiple locations by outlining an area on a map.	□High □Medium	□Low	□Not Applicable
User selects a location or locations by entering text (address, intersection, subdivision, stream name, or watershed).	□High □Medium	□Low	□Not Applicable
User selects layers which contain categories of data for locations on the map.	□High □Medium	□Low	□Not Applicable
User browses a page describing the stormwater program in sections with links to relevant documents/data.	□High □Medium	□Low	□Not Applicable
User selects one or more items (streams, assets, etc.) and views them on a map.	□High □Medium	□Low	□Not Applicable
A user selects location(s) on a map, and can view documents/data from a variety of categories of information.	□High □Medium	□Low	□Not Applicable



#### **Stormwater Assets and Elements**

User reviews the reported existing conditions of a stormwater asset, which could include text, documents, photos, reports, or videos.	□High □Medium	□Low	□Not Applicable
User reviews the current inspection reports for stormwater asset, which could include text, documents, photos, reports, or videos.	□High □Medium	□Low	□Not Applicable
User locates existing stormwater assets and those that are under construction, which are highlighted and clickable.	□High □Medium	□Low	□Not Applicable
User locates a pond and verifies whether it belongs to Aurora or another entity.	□High □Medium	□Low	□Not Applicable
User selects a stormwater asset and reviews details about that asset, such as maintenance activity, condition, record drawing, etc.	□High □Medium	□Low	□Not Applicable
User reviews an asset or map to determine where to place sandbags to protect the stormwater system from a hazardous spill.	□High □Medium	□Low	□Not Applicable
Aurora employee locates a pond to determine the last time it was maintained (such as mowing or dredging) and when the next maintenance is due.	□High □Medium	□Low	□Not Applicable
User reviews drainage studies and citizen drainage complaints for stormwater assets within a specific location. Views drainage problem areas.	□High □Medium		□Not Applicable
User selects a stormwater asset and can view video of CCTV condition assessment.	□High □Medium	□Low	□Not Applicable



#### **Operations and Maintenance**

User locates a construction permit for a specific location.	□High □Medium	□Low	□Not Applicable
User reviews a dashboard showing open work orders and/or maintenance activities for the day, week, month, or for a location.	□High □Medium	□Low	□Not Applicable
User determines if open permits are in effect near a location at which a citizen reports an issue.	□High □Medium	□Low	□Not Applicable
Staff locates license agreements and other business documents which pertain to railroads and the Air Force Base.	□High □Medium	□Low	□Not Applicable
Aurora employee searches for all current construction sites in a location with implications for stormwater quality.	□High □Medium	□Low	□Not Applicable
Customer calls Access Aurora with a complaint about a beaver dam in the creek by their house. User checks the location to determine whether the issue has been logged as a work order.	□High □Medium	□Low	□Not Applicable
Aurora staff indicates an area on the map and views open work orders.	□High □Medium	□Low	□Not Applicable
Staff selects an address/asset and views list of all enforcement actions.	□High □Medium	□Low	□Not Applicable
Staff assigns a work order to the code enforcement officer who is nearest the location.	□High □Medium	□Low	□Not Applicable
Staff locates liquor licences and tax information for businesses within Aurora.	□High □Medium	□Low	□Not Applicable
Employee selects an asset or asset type and views training video(s) on O&M tasks.	□High □Medium	□Low	□Not Applicable



#### **Capital Planning**

User views 10-year stormwater capital improvement projects as pinpointed locations on a map through which they can access additional details.	□High □Medium	□Low	□Not Applicable	
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#### Environmental/Quality

A new developer wants to build in Aurora. Aurora staff reviews water quality and stormwater asset data in the location to determine if the infrastructure can support the new project.	□High □Medium	□Low	□Not Applicable
Aurora staff selects a layer to view all active stormwater quality permits and inspection reports to ensure compliance with regulations.	□High □Medium	□Low	□Not Applicable
Aurora employee reviews MS4 permit program details for an area.	□High □Medium	□Low	□Not Applicable
User views wetland areas within Aurora.	□High □Medium	□Low	□Not Applicable

#### Issues

Aurora employee searches for citizen complaints regarding drainage and flooding in a certain area of the city.	□High □Medium	□Low	□Not Applicable
Citizen reports a backed-up storm sewer and the employee reviews the location for existing work orders to fix the problem.	□High □Medium	□Low	□Not Applicable
Staff reviews recent reported issues as pinpoints on a map to identify problematic areas.	□High □Medium	□Low	□Not Applicable
Citizen complains about construction pollution in a stream and the Aurora employee identifies construction activities in the area and whom to follow up with.	□High □Medium	□Low	□Not Applicable
Staff reviews response metrics over various periods of time.	□High □Medium	□Low	□Not Applicable



#### Other

User searches for documents/data in non-map based page with a list of results.	□High □Medium	□Low	□Not Applicable
User reviews a dashboard of stormwater activity: floods, work orders, maintenance, construction, complaints, etc.	□High □Medium	□Low	□Not Applicable
For an Aurora location, users can also review assets and project details pertaining to roads/streets, wastewater, drinking water, and other facilities along with stormwater data.	□High □Medium	□Low	□Not Applicable
Aurora employee searches for all current road projects in a location with implications for stormwater quality.	□High □Medium	□Low	□Not Applicable
Staff views a flag on dashboard for multiple work orders scheduled for a single asset and determines whether there are conflicting work orders. For example, one work order indicates that a pond should be mowed, and another indicates that it is also scheduled for dredging, which should be performed first.	□High □Medium	□Low	□Not Applicable
Staff views timeline of planned projects for an area/asset to better coordinate with other departments (i.e. parks may have a project planned in 3 years that is similar to a water project planned in 2 years).	□High □Medium	□Low	□Not Applicable
A new employee reviews the information available through the system as a method to get up to speed with tasks associated with their role, which facilitates the transfer of institutional knowledge between employees.	□High □Medium	□Low	□Not Applicable
Users can review linked non-Aurora owned documents on an ongoing basis (See systems diagram/listing).	□High □Medium	□Low	□Not Applicable
User views current sewer and water bonds.	□High □Medium	□Low	□Not Applicable



#### Add New Use Cases

Type additional use cases here.	□High □Medium	□Low	□Not Applicable
	□High □Medium	□Low	□Not Applicable
	□High □Medium	□Low	□Not Applicable
	□High □Medium	□Low	□Not Applicable
	□High □Medium	□Low	□Not Applicable
	□High □Medium	□Low	□Not Applicable

Aurora Sto REVIEW COM	ormwater Program Master Plan IENT SUMMARY AND RESOL	, Phase 1 JTION SHEET				
Submittal: Phase 1 Report	Author: URS	Date: 2/4/13		CODE		
Agency/Company: City of Aurora	Reviewers:		Page: 1 of 12	1. 2. 3.	Correct, add, delete Clarify or discuss Resolution of comment in future submit	

	<sup>(1)</sup> Para. No.		(3)	<sup>(4)</sup> Final Disposition	
Item No.	or Page No	Comments	<sup>(3)</sup> Response	<sup>(2)</sup> Code	Date
1.	TOC pg. ii	CW: There are some tables in the report missing from this list.	Table titles have been added to the TOC.		
2.	Sec. 1.1, Pg. 1-1, 1 <sup>st</sup> para.	Sean: Does study area extend outside the current City limits? If not, then we shouldn't state that here.	Study area extends outside the City limits to the urban planning boundary.		
3.	Sec. 1.1, Pg. 1-1, 1 <sup>st</sup> para.	CW: Please highlight the UDFCD and planning area boundaries so they stand out more.	Figure 1.1 has been revised.		
		LT: General comments:			
		• The doc loses the broad focus at times, and narrows down to storm water only readers or field staff. Scrub the doc for making sure that it is "purposely organized across multiple departments" at the same time meeting coordination, etc. of storm water activities (as stated in more detail on pg. 3-1).	The focus of this project is stormwater capital planning, operations & maintenance, and stormwater asset management. While the focus is stormwater infrastructure, tools and procedures to be built in Phases 2 & 3 will be purposely developed to be applicable across multiple departments.		
4.	Sec. 1.2, Pg. 1-1	<ul> <li>Reporting is an important task for compliance, should be incorporating in the various discussion, table and figures.</li> </ul>	Reporting will be considered and incorporated into the viewing tool to be built in Phase 3. The groundwork will be laid in Phase 2.		
	_	Storm water or stormwater?	Stormwater is used consistently through the document.		
		<ul> <li>There are some areas with very detailed goals and recommendations, and others that just skim the</li> </ul>	Phase 2 recommendations are focused on Stormwater Capital Planning and GIS database development.		
		goals/recommendations. This should be consistent, and at a minimum Phase I should have clear recommendations to lead us into Phase 2.	Phase 2 is funded, and the groundwork will be laid for completion of the project in Phase 3.		
		<ul> <li>Is Phase 2 funded, I am guessing this will include even more detailed recommendations to get us to Phase 3?</li> </ul>			
If no comment, write "NO COMMENT"		<ul> <li>(1) Indicate paragraph # or page #, or use</li> <li>"G" for General Comment</li> <li>(2) To be filled out at Review Meeting</li> </ul>	(3) To be filled out by URS and City of Aurora (4) To be determined in subsequent meeting/discus	sion	

Aurora Stormwater Program Master Plan, Phase 1 REVIEW COMMENT SUMMARY AND RESOLUTION SHEET				
Submittal: Phase 1 Report	Author:	Date:		
		URS	2/4/13	
Agency/Company:	Reviewers:		Page:	
City of Aurora			2 of 12	

	<sup>(1)</sup> Para. No.		(3)	<sup>(4)</sup> Final Disposition	
Item No.	or Page No.	Comments	<sup>(3)</sup> Response	<sup>(2)</sup> Code	Date
		LT: Figure 1.2 – reference to Mark Donelson and Joe McCleary, as Owner – should be Aurora Water or Aurora Stormwater/Wastewater?	Figure 1.2 updated.		
		Add Aurora Water after my name under Stakeholders			
5.	Sec. 1.3,	Add Pat Schuler, PROS under Stakeholders			
	Fg. 1-2	Add Tracy Young, PROS under Stakeholders			
		Add Ron McCune, PROS under Stakeholders			
		<ul> <li>Add either Sean Lieske or Deb Kula, under Technical Support (regulations)</li> </ul>			
6.	Sec. 1.3, Pg. 1-4	Sean: Need to be careful how this term is used in the report.	This project is called "Stormwater Program Master Plan". Usage is consistent with the purpose of the project.		
7.	Pg. 2-2, 1 <sup>st</sup> Bullet	Mel: and possibly to the proposed "regulatory compliance" tracking system for MS4 documents.	This is the first the consultant team has heard of the proposed "Regulatory Compliance Tracking System".		
8.	Pg. 2-2, 3 <sup>rd</sup> Bullet	Mel: funds?	I.e. the stormwater program budget must provide funds for creating and maintaining a new management system.		
9.	Pg. 2-2, 8 <sup>th</sup> Bullet	Sean: Don't know if this is an objective of the SWPMP as stated. CIP and maintenance activities will need to account for the changing Reg Env, but the SWMP will not be.	The TAC and consultant team will need to keep this in mind in Phases 2 and 3, while building the database and ultimately the viewing tool, which will need to link		
		Mel: Or link to the proposed regulatory tracking system for regulatory impact assessment and evaluation of alternatives.	to the proposed Regulatory Compliance Tracking System.		

If no comment, write "NO COMMENT"	(1) Indicate paragraph # or page #, or use "G" for General Comment (2) To be filled out at Deviaw Meeting	<ul><li>(3) To be filled out by URS and City of Aurora</li><li>(4) To be determined in subsequent meeting/discussion</li></ul>
	(2) To be filled out at Review Meeting	

Aurora Stormwater Program Master Plan, Phase 1 REVIEW COMMENT SUMMARY AND RESOLUTION SHEET					
Submittal: Phase 1 Report Submittal Aut			Date:		CODE
Agency/Company: City of Aurora	Reviewers:		Page: 3 of 12	1. 2. 3.	Correct, add, delete Clarify or discuss Resolution of comment in future submittal

	<sup>(1)</sup> Para. No.		(3)	<sup>(4)</sup> Final Disposition	
Item No.	or Page No.	Comments	<sup>(3)</sup> Response	<sup>(2)</sup> Code	Date
10.	Pg. 2-2, Last para.	Sean: This needs re-wording. Bill: Aurora Water?	Sentence revised, Aurora Water is correct.		
11.	Pg. 2-6, Sec. 2.3.1, 1 <sup>st</sup> para.	Sean: This make it sound like this has already been done. Needs re-wording.	Data sets and records were prioritized in Phase 1, as shown in Table B-1.		
12.	Pg. 2-6, Sec. 2.3.1, 2 <sup>nd</sup> para.	Sean: It this true? We are supposed to use Oracle, but don't know how much is has been used.	The consultant team understands this is true. One of the objectives of Phase 2 is to get priority stormwater documents into Oracle so they can be found and viewed across multiple departments.		
13.	Pg. 2-7, Table 2-1	LT: Should this table be consistent with Figure 1.2? Add Pat Schuler, Aurora, PROS, Manager Open Space & Natural Resources. Change my role to AW/PROS Add Ron McCune, Aurora, PROS, O&M	Table 2.1 has been revised.		
14.	Pg. 2-10, 1 <sup>st</sup> Bullet	<ul> <li>Bill: For CIP projects? PW currently has a method for storing approved drawings.</li> <li>Mel: Aurora is also currently defining a process for compliance management which will necessarily address many common records and activities related to the SWMP. The two systems should be developed in coordination to reduce duplication and error.</li> </ul>	Yes, for AW CIP projects. The proposed "Regulatory Compliance Management System" will need to be linked to other databases. Phase 2 work will need to coordinate with this proposed system.		
15.	Pg. 2-10, 4 <sup>th</sup> Bullet	Mel: Compliance and enforcement activities will be recorded in the Regulatory Compliance system as compliance points and in Oracle (eventually) as records. Including SWPPs, 404 Permits, enforcement actions, IGAs, etc.	The proposed "Regulatory Compliance Management System" will need to be linked to other databases. Phase 2 work will need to coordinate with this proposed system.		
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16.	Pg. 2-10, 6 <sup>th</sup> Bullet	Mel: All IGAs that follow the standard signatory and retention process through Council are stored in Oracle, but may not be assigned attributes according to the retrieval needs of the SWPMP and related needs.	This will be addressed in the SWPMP Phase 2 and Phase 3 projects.		
		Bill: Meadowood Drainageway has 9 reports list from 1977 to 2000.	Meadowood is listed, and the Table has been updated. Sand Creek 1977 FHAD applies to Meadowood and is listed in this table.		
17.	Pg. 2-12, Table 2.2		Note that Aurora is not listed as sponsor for three maintenance projects on Meadowood, which is why the projects did not appear on the list we received from UDFCD. For the Phase 2 project, the consultant team will need to search UDFCD website more thoroughly.		
18.	Pg. 2-14, Table 2.2	Bill: Easterly Creek Phase B completed 12/12.	Added to table 2.2 under Westerly Creek.		
19.	Pg. 2-14, Table 2.2	Sean: Need to bring this out better rather than have it as a footnote.	Note added to text.		
20.	Pg. 2-15, Figure 2.3	Mel: development of the regulatory management compliance system means connectivity to these systems as well.	The proposed "Regulatory Compliance Management System" will need to be linked to other databases. Phase 2 work will need to coordinate with this proposed system.		
21.	-1	Sean: Not sure this is a true statement.	Staff uses AMANDA to store documents in Oracle.		
	Pg. 2-15, 1 <sup>st</sup> para.	Mel: staff is instructed not to use this. However the purge process is not active and there is no date established for activating this purge.	The "Purge Policy" will be reviewed in Phase 2.		

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22.	Pg. 2-16, Sec. 2.3.2.2, 1 <sup>st</sup> para.	Mel: documentation stored in AMANDA and associated with the address record and documents stored in Oracle	All search methods will be reviewed and confirmed in Phase 2.		
23.	Pg. 2-16, Sec. 2.3.2.3, 1 <sup>st</sup> para.	Mel: Searches from other metadata can also be done from ADAMS including searches by keyword and document type.	Noted.		
24.	Pg. 2-16, Sec. 2.3.2.4, 1 <sup>st</sup> para.	GC: SharePoint Systems last sentence is this true that CPDNet is being imported into Oracle, I did not think that this was happening or possible at this time.	There is no automated way to do it currently. Our understanding is that CPDNet project files are manually input to Oracle approximately quarterly.		
25.	Pg. 2-17, 5 <sup>th</sup> para.	Mel: What capabilities are these?	Examples added to text.		
26.	Pg. 2-17, 6 <sup>th</sup> para.	Mel: ?	Text revised.		
27.	Pg. 2-17, last para.	GC: "dashboard capabilities" are user defined, there are no standardized dashboards being used. Mel: good to know for integration with the compliance management tracking system.	Text revised. Noted.		
28.	Pg. 2-18, 2 <sup>nd</sup> para.	CW: Is the data for storm pumping stations stored separately and able to be retrieved for data from other pumping stations? Let's be careful not to establish different criteria or processes for each station type that would complicate efforts for the operations team.	Text revised. This will be addressed in the SWPMP Phase 2 project when attributes for assets are established.		
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		LT: This should be changed - there are 3 treatment plants, But multiple pumping stations, data is ultimately centrally recorded. There should be one database for wastewater and storm water, with respect to documenting compliance.			
29.	Pg. 2-18, 4 <sup>th</sup> para.	Mel: also good to know for integration with the compliance management tracking system.	Noted.		
30.	Pg. 2-18, Sec. 2.4.2	LT: This refers to the storm water GIS. The recommendation should be more detailed and should include an upgraded City-wide GIS system to be used by multiple departments, for various purposes, including layers to pull down menus for maintenance schedules, budgeting, etc.	This project is focused on stormwater infrastructure. The goal for the SWPMP Phase 2 and Phase 3 project is to build the database and ultimate viewing tool for use on a City-wide basis, and for future application in other divisions and departments for other City infrastructure.		
31.	Pg. 2-18, Sec. 2.4.2, 3 <sup>rd</sup> bullet	Bill: Is this now complete since this is 2013?	Will verify in Phase 2.		
		LT: This section reads very differently than the rest of the document. Needs to be cleaned up.	Section has been revised.		
32.	Pg. 2-19, Sec. 2.5	The section describes OPS and its activities, but it does not include any conversation about shared use of site as a City amenity. Discussion here is about Ops view of UDFCD as a contractor, there is not a goal/ recommendation for re- consideration of that – perhaps Ops should reconsider how they perceive them? i.e., UDFCD is more than that – on a regional scale.	This report is focused on stormwater. This section reports how Ops currently works with UDFCD. The consultant team may recommend changes to how finances are budgeted and tracked in Phase 2.		
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		This discusses how the OPS group is small and limited in how they plan. This should include clear recommendations on how to correct that – or will this come in Phase 2?	O&M planning for stormwater will be addressed in Phase 2, task 1.		
33.	Pg. 2-19, 6 <sup>th</sup> para.	CW: Each pond, every month? Is this right?	Per the meeting minutes.		
34.	Pg. 2-20, 3 <sup>rd</sup> para.	LT: SharePoint development for not only field staff, but multiple departments - as part of the GIS platform, for scheduling projects, avoiding conflicts and increasing efficiencies City-wide.	This will be addressed in Phase 3.		
35.	Pg. 2-20, 4 <sup>th</sup> para.	MD: There are 8 staff in WW dedicated to pipeline inspections, no dedicated SW staff.	Text revised.		
26	Pg. 2-20, 5 <sup>th</sup>	MD: the level of service was established with consideration of City Council goals.	Noted.		
30.	para.	Sean: This doesn't make sense. The 2 sentences don't seem to go together.	Text revised.		
37.	Pg. 2-20, 6 <sup>th</sup> para.	These needs should be acknowledged in the Regulatory Compliance Management program as well in order to correlate the two systems and to match reporting outputs.	Noted.		
		Sean: Need more. This seems like a fragment sentence.	Text revised.		
38.	Pg. 2-21, 2 <sup>nd</sup> para.	LT: Add Pat Schuler, Lori Tagawa, Tracy Young	Not in CIP Meetings.		

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39.	Pg. 2-21, 3 <sup>rd</sup> para.	CW: I don't think this is true. LT: I think that risk is certainly a part of current project evaluation, and should be in future projections! Should include all departments on all levels so that we can predict projects, be in compliance and avoid overlap/conflicts (i.e., sediment removal in creeks, FEMA regulations, CWA, parks and/or golf and/or trail impacts)	Text revised. This is the goal for planning procedures to be developed in Phase 2.		
		LT: Aurora is not a new city. CW: I wouldn't say is hasn't been an issue, but not a "big" issue.	Text revised.		
40.	Pg. 2-21, 5 <sup>th</sup> para.	MD: The "justification" process/document is planned for 2013.	In Phase 2.		
41.	Pg. 2-21, 7 <sup>th</sup> para.	LT: land acquisition demands LOTS of staff time and impacts both schedule and budget! CW: However, it does have a big impact on project schedule and cost.	Text revised.		
42.	Pg. 2-21, last para.	LT: there needs to be a comprehensive strategic approach for 1, 5, 10, 20 –year CIP updates and projections.	This is a goal of SWPMP Phase 2 project.		
43.	Pg. 2-23, 3 <sup>rd</sup> para.	<ul><li>MD: I would say that some of the street sweeping costs.</li><li>Sean: This doesn't flow very well.</li><li>Mel: May need to revise this and be sure to evaluate any changes in process with the change in system.</li></ul>	Text revised.		
44.	Pg. 2-23, 5 <sup>th</sup> para.	Mel: Call center also uses Amanda for researching issues.	Noted.		

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45.	Pg. 3-2, item b.	Mel: See Compliance Management program development notes throughout	Noted.		
46.	Pg. 3-2, 1 <sup>st</sup> para.	Sean: This sentence doesn't flow right, too much information in one sentence.	Text revised.		
47.	Pg. 3-2, 1 <sup>st</sup> para.	Mel: and should reflect activities underway in Amanda, Hansen, Oracle and new compliance tracking efforts.	Text revised.		
40	Pg. 3-3,	LT: Database GIS – entry, all multiple department contributors and multiple department users.	To be addressed in Phase 2.		
40.	Figure 3.1	Conduct quality assurance and user acceptance testing and train user's boxes – does this consider user requirements?	Yes. User requirements are established in first sub- task.		
49.	Pg. 3-5, 2 <sup>nd</sup> para.	LT: For all bullet (Points), emphasize multiple department input and usage, not just swww and aw.	Focus of Phase 2 project is Stormwater, and the goal is multiple department usage and compatibility.		
50.	Pg. 3-5, No. 1	Mel: Oracle.	"GIS" is the intent.		
51.	Pg. 3-5, No. 2	Sean: This is restated in item 9. Only needs to be in one location.	All references to "training" moved to item 9.		
52.	Pg. 3-6, No. 7	LT: the planning and budgeting should not only include capital for replacement, but also maintenance and mitigation during maintenance. For example, costs and schedule should be included for impact to trails and revegetation related to maintenance activities.	Noted. Will be addressed in Phase 2.		
53.	Pg. 3-6, No. 10	LT: add O&M cost and schedule for mitigation during maintenance activities. CW: Can this sentence be re-worded? I don't quite follow	Noted. Will be addressed in Phase 2. Text revised.		
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E A	Pg. 3-6,	LT: Multiple departments.	Text revised.		
54.	No. 12	Sean: Include in item 9 above.			
55.	Pg. 3-7, Figure 3.2	GC: under the first box third bullet Review Each Sub-basin for Failure Modes" only the next four sub bullets are failure modes 5th to 8th should be first order bullets.	Figure revised.		
56	Pg. 3-10,	Change Hanson to Hansen	Figure revised.		
50.	Figure 3.3	LT: Change "Parks" to PROS			
		Change Hanson to Hansen	Figure revised.		
57. F	Pg. 3-11, Figure 3.4	LT: Figure 3.4 seems to focus on getting data from UDFCD, it should equally focus on methodically getting internal existing data from other City departments.	Noted for Phase 2. Holly Kikel, PROS-GIS, will be contacted among others.		
59	Pg. 3-13,	LT: Table – where do scheduling, budget, checking for conflicts with upcoming projects fall, build in alerts?	Would be addressed in Task 1, Phase 3.		
50.	Table 3.1         LT: Table continued – not only a layer to view but specilimits, next/upcoming reporting times, alerts? etc.	LT: Table continued – not only a layer to view but specified limits, next/upcoming reporting times, alerts? etc.	Would be addressed in Task 1, Phase 3.		
59.	Pg. 3-14, last para.	CW: Also need to discuss the requirement to have IT involved for system approval.	Text revised.		
60.	Pg. 3-15, Figure 3.5	LT: again focus on the multi users, departments.	Stakeholders and users will be involved in the process as noted in Tasks 1, 2, 3, 5, 6 and 8		
61.	Pg. C-1	Sean: Should this include a cost estimate?	Fee proposal provided separately.		
62.	Pg. C-2, 5 <sup>th</sup> bullet	Sean: These are not detailed on the Gantt chart.	Called "Progress Meetings". "Workshops" added to task description.		

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63.	Pg. C-2, 6 <sup>th</sup> bullet	CW: We currently have a Project Initiation form (or memo). Maybe this will just be an adaptation or revision.	Agree.		
64.	Pg. C-2, Task 1.1	CW: Same text twice.	Duplicate text has been deleted.		
65.	Pg. C-2, Task 1.2	Sean: What is this? Describe.	The Delphi method was developed by Gordon and <u>Helmer</u> in 1953 at <u>RAND</u> . It can be defined as a method for structuring a group communication process that is effective in allowing a group of individuals, as a whole, to deal with a complex problem.		
66.	Pg. C-2, Task 1.3	Sean: Same as above. Need more detail.	See 65.		
67.	Pg. C-2, Task 1.6	Workshops are not depicted on the Ghant chart.	See 62.		
68.	Pg. C-3, 2 <sup>nd</sup> bullet	Sean: metadata?	Asset attributes in GIS.		
69.	Pg. C-4, 3 <sup>rd</sup> subheading	CW: Please make sure these GIS scope items are updated to account for comments in the report, if any.	No comments affected to scope.		
70.	Pg. C-4, Task 2.3	Sean: Need to describe how next steps, 2.3 thru 2.9, will be alpha tested on a high priority watershed and then deployed to other watersheds after refinement of the process.	Scope states the process will be tested in the Granby/Sable Ditch watershed. All processes and deliverables will be subject to approval and acceptance by Aurora before work continues on other watersheds.		
71.	Pg. C-4, last subheading	Sean: Need to include a process refinement step in the written document and Gantt chart.	It's implicit to the process.		

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72.	Pg. C-8, Task 3	CW: The fee schedule should be set up to better follow the scope. For instance, in the fee schedule Task 3 is Develop the Solution. Also in the fee schedule, I cannot find items such as Task 2.8, Field Recon & Data Input.	Fee proposal revised.		
73.	Pg. C-8, Task 3.3	CW: I don't think we're doing a "tool" in this Phase. Or, is this referencing something other than the dashboard?	Scope of work revised.		
74.	Pg. C-8, Phase 3	Sean: Do we want this included? If so, it may be pertinent to have a Gantt chart that outlines expected time frames for Phase 3. CW: Why is Phase 3 being discussed in the Phase 2 scope?	Scope of work revised.		
75.	Pg. C-8, Task 3.4	CW: ?	"Tool" is future project, Phase 3.		

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