2020 Decennial Flow Monitoring

Presented to MWPAAC

Engineering and Planning Subcommittee

November 1, 2018

King County

Department of Natural Resources and Parks

Wastewater Treatment Division

Presentation Overview

- Project Background
- Project Objective
- 2020 Decennial Flow Monitoring (DFM) Approach
- Site Selection/Investigation
- Project Schedule

Project Background

The Regional Wastewater Services Plan (RWSP) policies call for periodically evaluating assumptions in the planning of conveyance facilities and conducting DFM to correspond with the census.

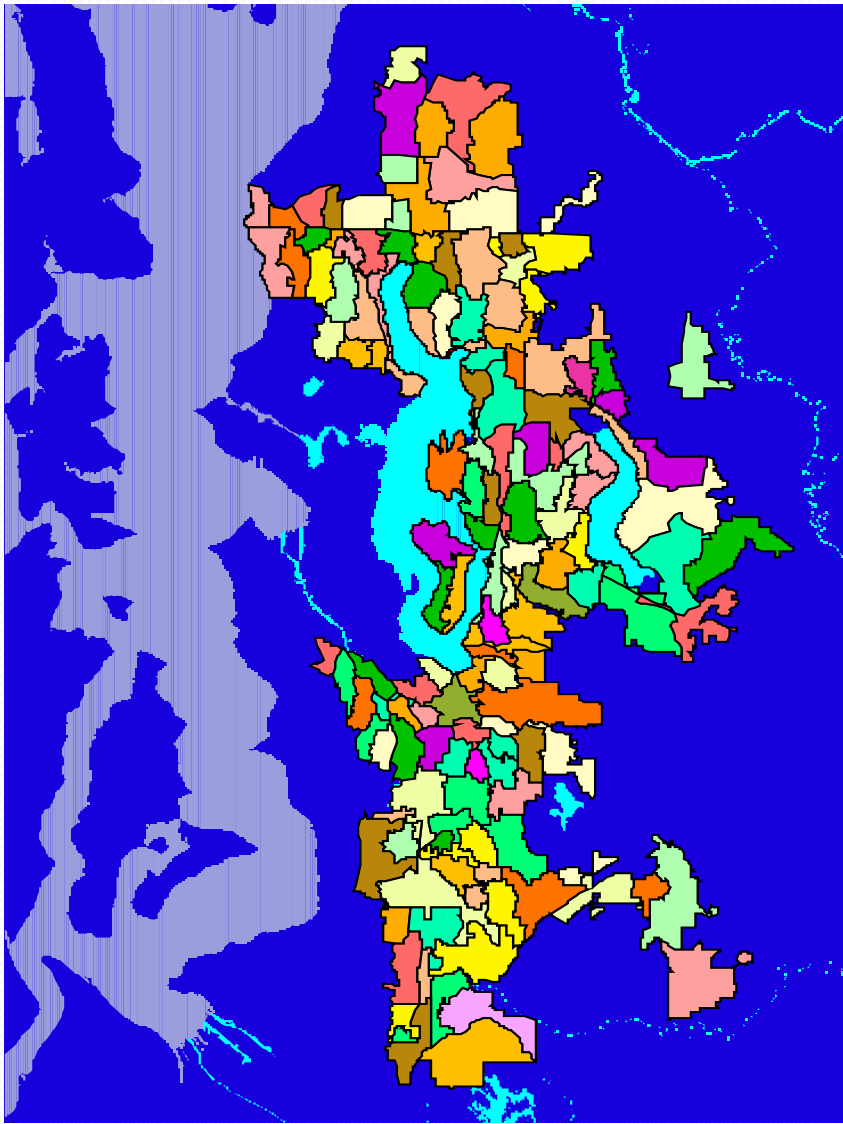
2020 DFM Project Objective

The 2020 DFM Project will collect accurate flow data over two wet seasons coincident with the 2020 census, for use in updating:

- Prioritization/timing of projects for implementation
- Sizing of new conveyance facilities

Monitoring Approach

- 2000 – 2002 I/I Project deployed meters at the Mini Basin level
- 2010 DFM deployed meters at the Modeling Basin level
- 2020 DFM – Deploy meters at the Modeling Basin level, primarily in King County Wastewater Treatment Division pipes



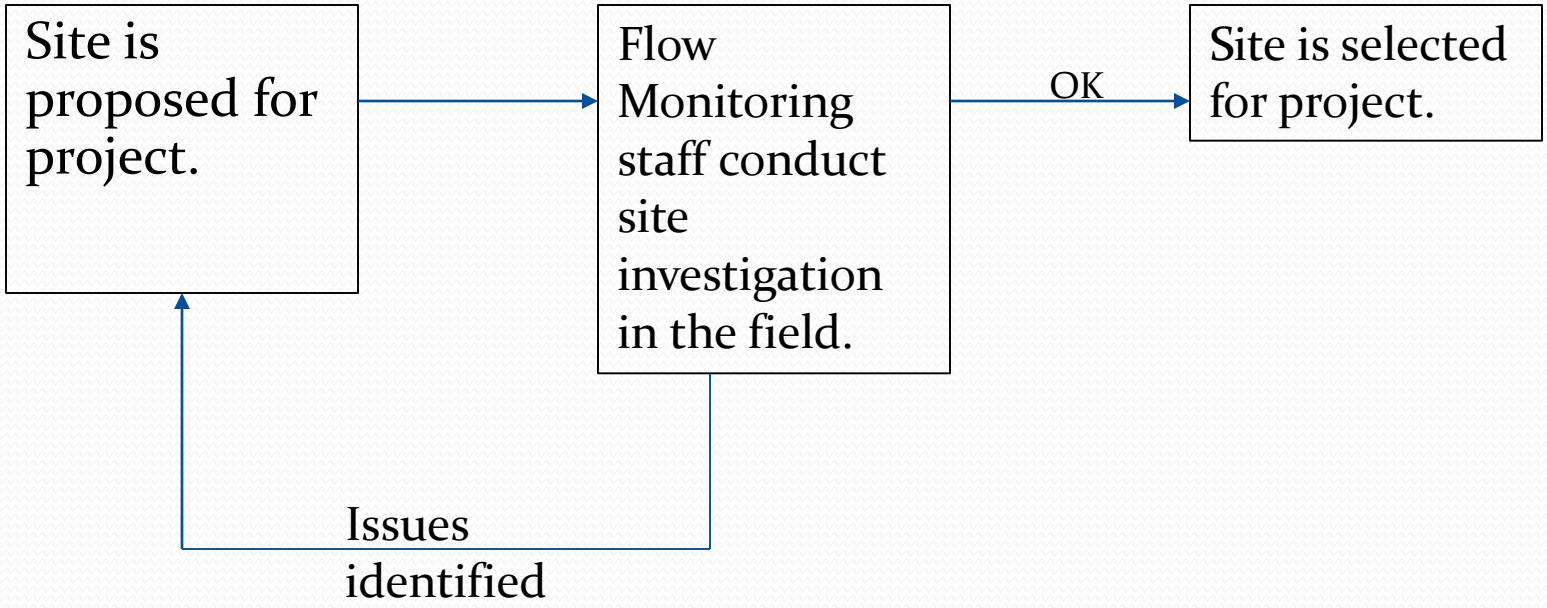
Goals of 2020 DFM Monitoring Approach

- Maintain existing sewer model basins and update for growth and changes in local systems
- Install meters to monitor:
  - areas primarily new construction/development
  - high priority CSI needs
  - project areas in CIP plan
- Leverage existing sewer model to assess meter locations
- Examine current meter technologies

2020 DFM Proposed Sites

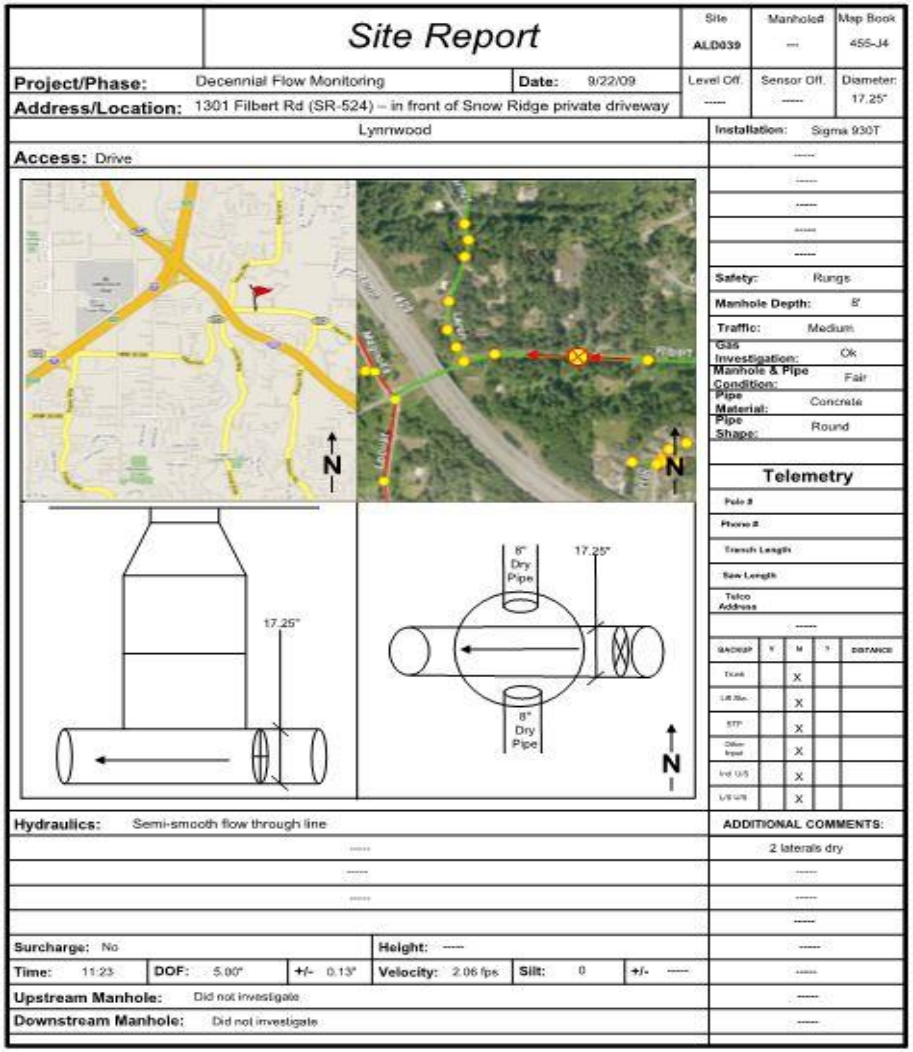
Meter_ID	MH_REF	ADDRESS	SWRAGEN	
ABN027	RE*WVAL.79-02	29th St. NW and Interurban Trail	AUBURN UTILITY SERVICES	F
ALD006	WW*SWAMP_S1-79.36		BRIER PUBLIC WORKS	
ALD011	NA		ALDERWOOD WATER & WASTEWATER DISTRICT	
ALD014	WW*SWAMP_S1-90.C64		ALDERWOOD WATER & WASTEWATER DISTRICT	
ALD039	WW*SWAMP_S1-90.C13		ALDERWOOD WATER & WASTEWATER DISTRICT	
ALD046	70-71	NA	ALDERWOOD WATER & WASTEWATER DISTRICT	<
ALD12	WW*SWAMP_S1-90.A27	19314 Locust Way	ALDERWOOD WATER & WASTEWATER DISTRICT	
ALD6	WW*NCREEK_76-1.03	<Null>	<Null>	<
ALD7	AnglePt_21		ALDERWOOD WATER & WASTEWATER DISTRICT	
AUBRN002	RE*AUBURN1.R18H-02	7121 S 217th St, south at end of warehouse	KENT PUBLIC WORKS	F
AUBRN53	RE*AUBURN3.R18H-53	1000 ft. E of 72ND Ave S & 44th ST NW	AUBURN UTILITY SERVICES	F
AUBWV016	RE*AUBWVAL.R83-16	Intersection of Boundary and O Street	AUBURN UTILITY SERVICES	F
BCT-06	BW*BOEING.BCT-06	20001 Richmond Beach Dr NW	RONALD WASTEWATER DISTRICT	E
BEL019	RE*COALR13-22	Coal Creek Park, park in Gravel lot to the east of mh	BELLEVUE UTILITY SERVICES	F
BEL052	RE*BLVDSIPH.T-1	15904 159th Pl SE	BELLEVUE UTILITY SERVICES	
BEL084	NA	82nd Ave NE & NE 8th St, Medina	<Null>	<
BEL117	NA	NE 8th St & 81st Ave NE	<Null>	<
BELLE019	RE*BELLEVUE.RO7-19	500 feet South of 2102 Bellevue Way SE	BELLEVUE UTILITY SERVICES	F
BELSUNSET	RE*ISSAQ1.SUNSET	Sunset PS	BELLEVUE UTILITY SERVICES	
BLACK003	RE*BLKDIA.03	Intersection of 185th PL SE & SE Timberlane Blvd.	SOOS CREEK WATER & SEWER DISTRICT	F
BLACK114	RE*BLKDIA.114	North of intersection @ Lake Sawyer Rd. SE & Auburn Bl	BLACK DIAMOND PUBLIC WORKS	F
BLS007	NA	11326 Rainier Ave S (Go through 3rd Gate)	SKYWAY WATER & SEWER DISTRICT	
BLS013	NA	Martin Luther King Jr Way S	<Null>	<
BLS43B	RE*BRYNMAWR.R01-43B	11416 RAINIER AVE S.	SKYWAY WATER & SEWER DISTRICT	
BOECR043	BW*BOEING.BOO-43	17065 10th Ave NW	RONALD WASTEWATER DISTRICT	E
BOT002	WW*KENMR.W11-66	9025 Bothell Way	NORTHSHORE UTILITY DISTRICT	V
BOTHW087	WW*BOTHWOOD.W11-87	11711 N Creek Parkway	BOTHELL PUBLIC WORKS	V
CDR011	RE*FAIRWOOD.R15-01	140th Way SE, on east side of road, in bushes	CEDAR RIVER WATER & SEWER DISTRICT	F
CDR012	RE*140TH.R14-06	140th Way SE, just south of HWY 169	CEDAR RIVER WATER & SEWER DISTRICT	F
CEDAR02A	RE*CEDAR1.R10-02A	817 N 3rd St	RENTON PUBLIC WORKS	F
CEDAR039	RE*CEDAR3.R10-39	4050 Hwy 169 (Renton/Maple Valley Rd)	RENTON PUBLIC WORKS	F
CEDAR4.R10-42	RE*CEDAR4.R10-51	1528 150th LN SE	CEDAR RIVER WATER & SEWER DISTRICT	F
CLARK555	RE*CLARK.555	25427 144th Ave SE	SOOS CREEK WATER & SEWER DISTRICT	F
COAL007	RE*COAL.R13-07	South of 4519 125th Ave SE	BELLEVUE UTILITY SERVICES	F
CRV003	WW*LBEAR.W11-A29	20103 Woodinville Snohomish Road	WOODINVILLE WATER DISTRICT	V
EGATE69A	RE*EGATE.R11-69A	SE Eastgate Way & 106th Ave E	BELLEVUE UTILITY SERVICES	F
ENATA01A	RE*ENATAI.RO8-01A	Enatai Beach Park Lake Washington	BELLEVUE UTILITY SERVICES	F

2020 DFM Site Selection and Investigation Process



2020 DFM Site Investigation

ALD039 Site Report Example



Site Report

Site	Manhole	Map Book
ALD039	---	455-J4

Project/Phase:	Decennial Flow Monitoring	Date:	9/22/09	Level Off.	Sensor Off.	Diameter:
Address/Location:	1301 Filbert Rd (SR-524) – in front of Snow Ridge private driveway			-----	-----	17.25"
	Lynnwood			Installation:	Sigma 930T	
Access:	Drive					

Safety:	Rungs
Manhole Depth:	8'
Traffic:	Medium
Gas Investigation:	Ok
Manhole & Pipe Condition:	Fair
Pipe Material:	Concrete
Pipe Shape:	Round

Telemetry

Pole #				
Phone #				
Trench Length				
Saw Length				
Telco Address				
MANHOLE	N	M	S	DISTANCE
Trunk		X		
Left Rear		X		
STP		X		
Other Input		X		
Inst U/S		X		
Left U/S		X		

Hydraulics:	Semi-smooth flow through line						ADDITIONAL COMMENTS:
							2 laterals dry
Surcharge:	No			Height:	-----		
Time:	11:23	DOF:	5.00"	+/- 0.13"	Velocity: 2.06 fps	Silt: 0	+/- -----
Upstream Manhole:	Did not investigate						
Downstream Manhole:	Did not investigate						

2020 DFM Site Investigation

ALD039 Pictures

2020 DFM Site Investigation

ALD039 Video

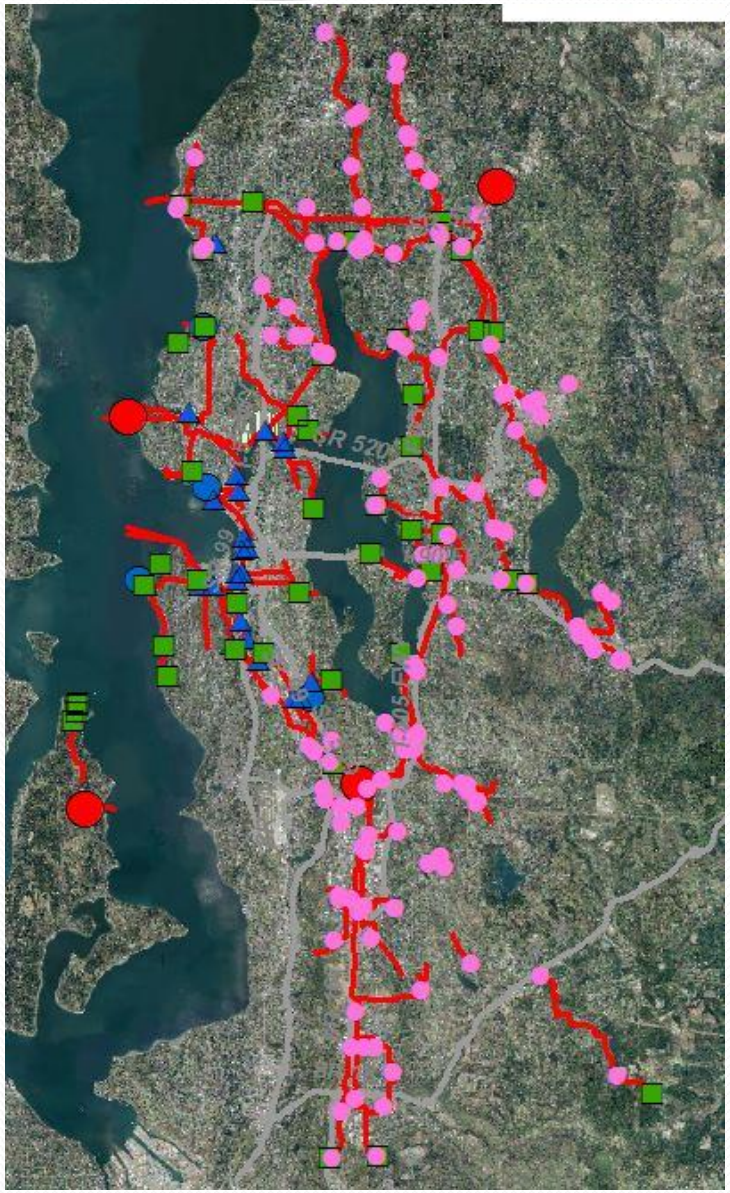
(Video removed from presentation – download video here.)

Hydraulic Applicability Grading Chart for Site Inspections		Date	Pipe Dimensions (HxW)		Site Name
		4/27/2018	17.25:		ALD039
Hydraulic Parameter	**Good = 0**	**Poor = 1**	**Bad / Fail = 2**	**Points**	**Comments**
Velocity	2 - 5 fps	dry at times, 1-2 fps, or >5 fps	negative or stagnant velocity	0	
Turbulence / Waves	no ripples	0.5"- 1" ripples	>1" ripples	1	
Uneven Flows (lateral level)	level	0.5" - 1"	>1" slant	0	
Accelerating Flows (pump station)	no surges	surges every 5 - 7 minutes	surges more than every 5 min.	0	
Bend	no bend	22° - 45°	46° - 90°	0	
Inputs	no inputs	inputs do not influence hydraulics	inputs influence hydraulics	0	
Silt / Sediment	no silt	< 20% of flow	> 20% of flow	0	
Traffic / Accessibility / Safety	no issues	inconvenient	inaccessible / unsafe	1	
Surcharging	no evidence of surcharge	some evidence of surcharge	site is surcharged in dry conditions	0	
Depth	>2" OR <50% of pipe height	1" - 2" OR 50% - 60% of pipe height	<1" OR >60% of pipe height	0	
	Total Add points from each category above, if site scored points in red box(es) it is an automatic FAIL			2	**Suggested Technology** TRITON+

PASS / FAIL	Pass : 0 - 5 Fail : 6+	PASS

Photo of MH facing North	X
Photo looking down MH	X
Photo looking up influent	
Photo looking down effluent	
Video of Flow	X

2020
DFM Sites



Schedule Estimate

- Planning Phase: September 2017 – September 2018
  - Develop project plan, site selection and investigation
- Development Phase: October 2018 – May 2019
  - Procurement of monitoring equipment, project staffing and training
- Implementation Phase: June 2019 – May 2021
  - Installation and maintenance of flow meters, data review and reporting
- Closeout Phase: June 2021 – June 2022
  - Documentation, records and archiving, equipment reassignment, disposition, and storage

Procurement

- Invitation to Bid vs. Request for Proposals
- Equipment Demonstration
- Investigate “piggy-backing” options

Local Agency Input

- Areas of predominantly new construction
- Pump stations with magnetic flow meter data
- Areas with portable flow monitoring planned for 2019-2021
- GIS information

Questions?

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