LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT

M E M O R A N D U M

DATE: **June 27, 2017**

TO: **BOARD OF DIRECTORS**
Lake Arrowhead Community Services District

FROM: **MIKE BLACKWOOD, Field Operations Manager**

CATHERINE CERRI, General Manager

SUBJECT: **REPORTING TO LAHONTAN REGIONAL WATER QUALITY CONTROL BOARD REGARDING CEASE AND DESIST ORDER R6V-2013-022**

A. RECOMMENDATION

This is an informational item only.

B. REASON FOR RECOMMENDATION

This is an informational item only.

C. BACKGROUND INFORMATION

The Lake Arrowhead Community Services District ("LACSD" or "District") has historically had high levels of inflow into the collection system during storm events. Old infrastructure and mountainous terrain create a challenge during heavy precipitation. In 2013, the Lahontan Regional Water Quality Control Board ("LRWQCB") issued a cease and desist order ("CDO") requiring LACSD to reduce inflow and infiltration ("I/I") into the collection system to avoid surges and unauthorized discharges at the wastewater treatment plant.

LACSD agrees that a reduction in I/I is in the best interest of the District, the community and the environment. The CDO specified milestones to be completed which included a study of the different basins to identify the largest inflows. Sewer monitors were installed and analyzed from 2012 to 2017. While there were several years of drought, there was enough data to identify certain areas as high or low inflow. A map showing these areas is attached. Analysis of the system is ongoing along with continual CCTV inspections and smoke testing.

The most recent year's data included closer to normal levels of precipitation. Staff utilized this information to conduct a Cost Effectiveness Analysis which ranked the

various monitored areas by volume of flow, wet to dry ratio and the cost effectiveness of removing the I/I in that area. The results are attached.

On June 21, 2017, District staff met with LRWQCB regarding the required milestones, ongoing reporting and next steps. LACSD staff discussed the sewer model requirement in the CDO and LRWQCB staff concurred that CDO compliance could be demonstrated using sewer flow monitor data to the treatment plants but requested an additional meter on the intertie between Grass Valley Wastewater Treatment Plant and Willow Creek Wastewater Treatment Plant ("WCWWTP") to show how the additional storage capacity at WCWWTP assists in avoiding an overflow. It was helpful to have Board approval for the sewer model in advance of the meeting. LRWQCB staff agreed that the funds could be better spent on updating and improving the GIS data. LACSD staff will confirm this in writing. LACSD staff also agreed to continue the sewer flow monitoring reporting.

D. FISCAL INFORMATION

This is an informational item only.

E. ATTACHMENTS

Excerpts from the June 15, 2017 CDO Report

Dry to Wet Flow Monitoring Ratios
2016-2017

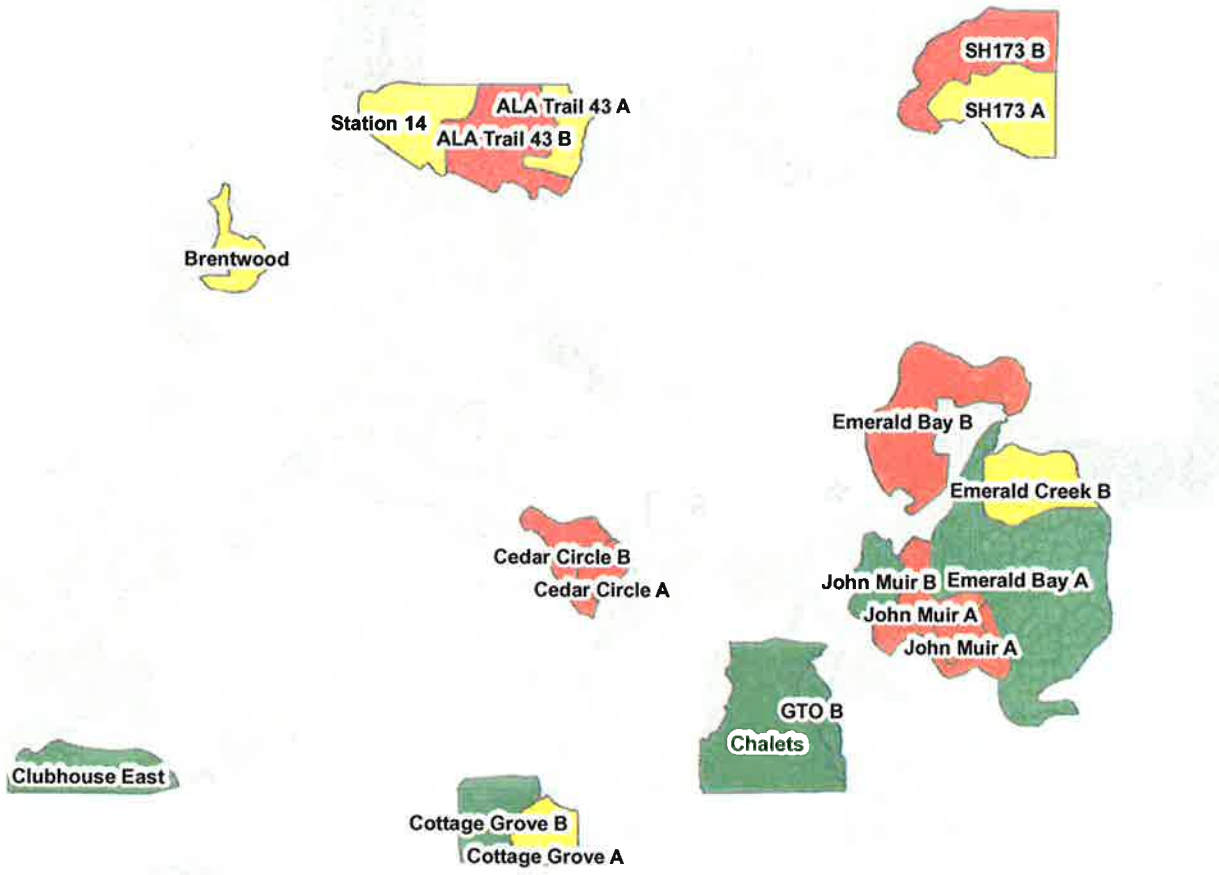
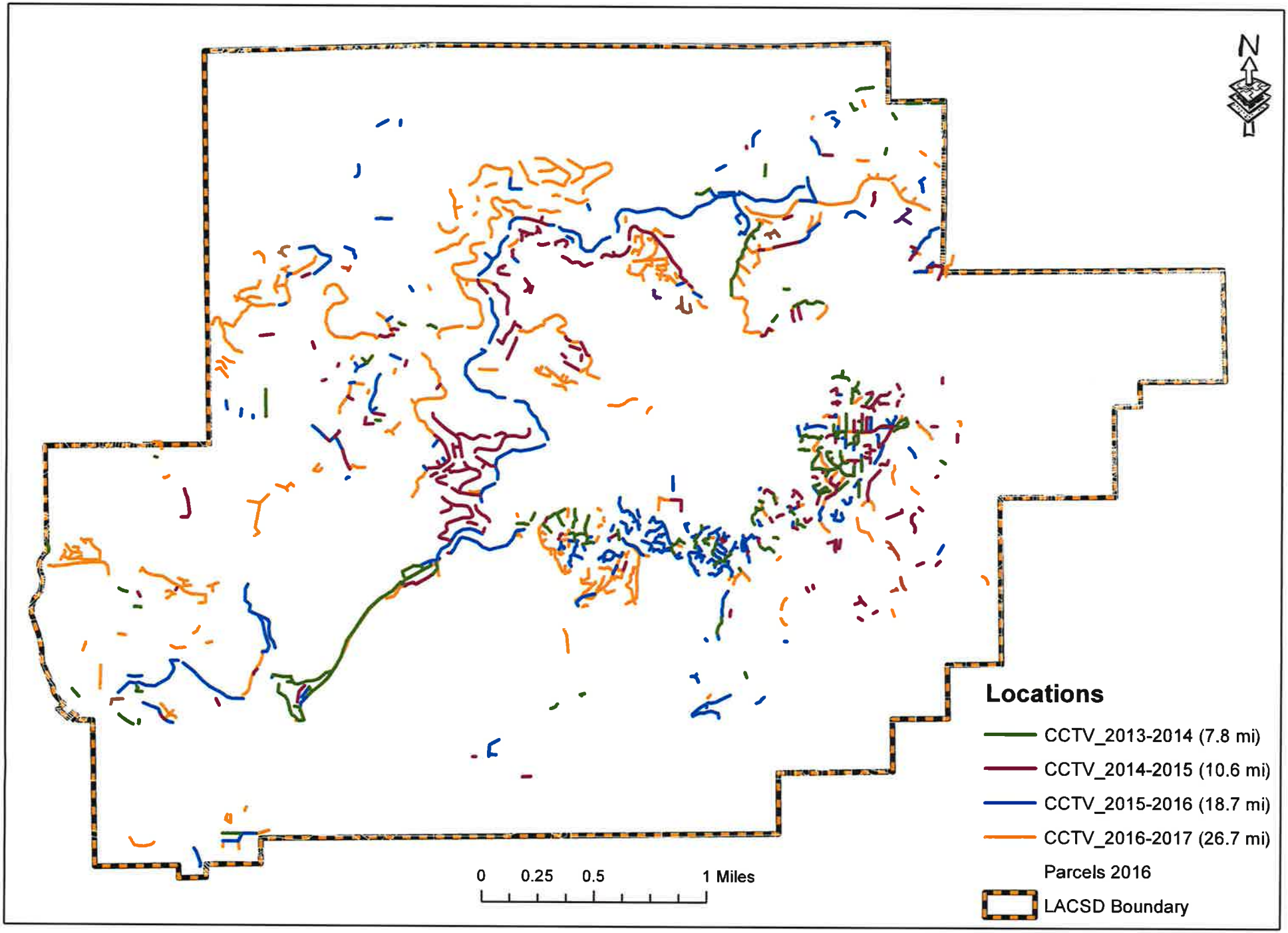
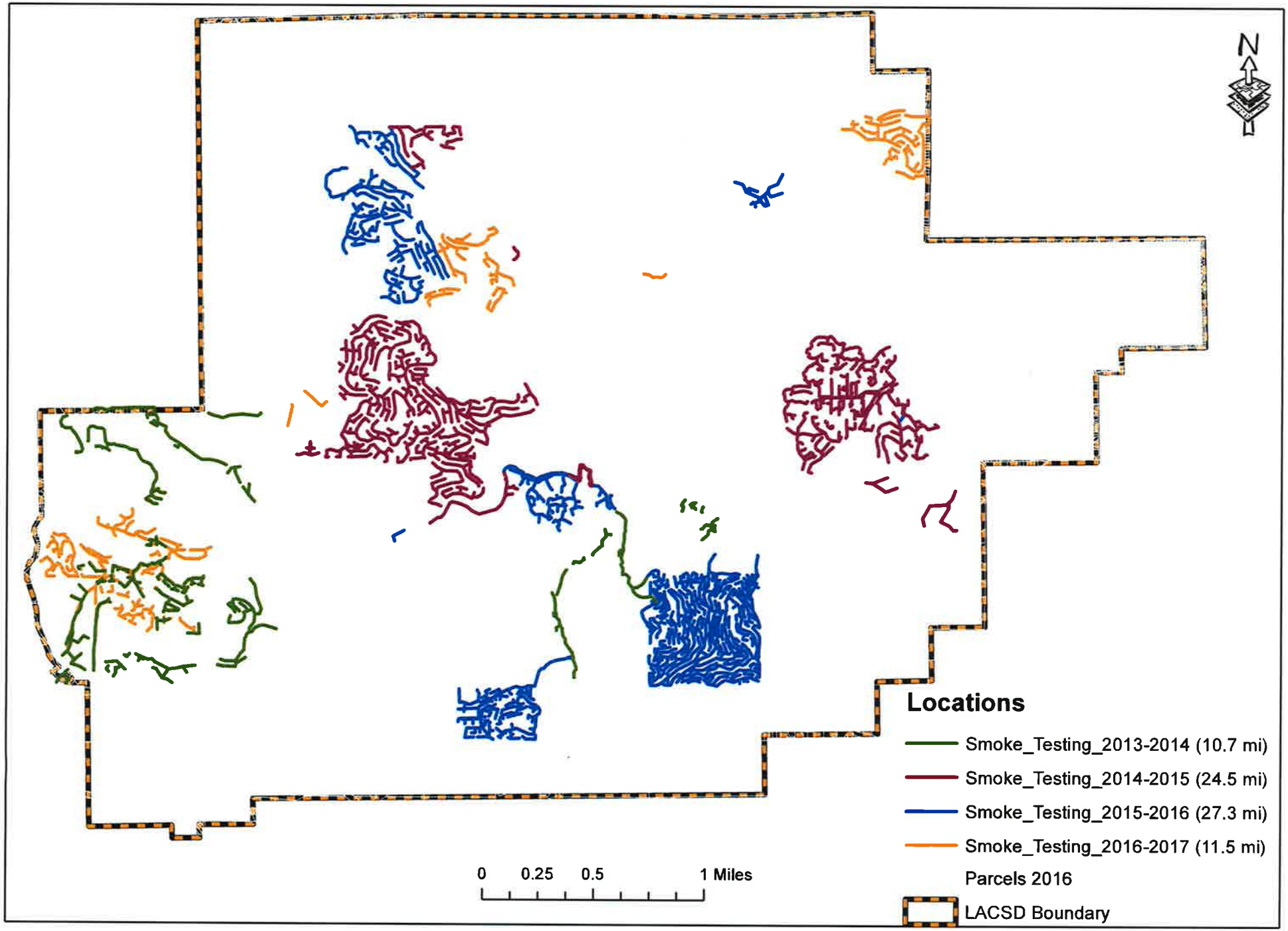


Exhibit 19



Annual CCTV Locations

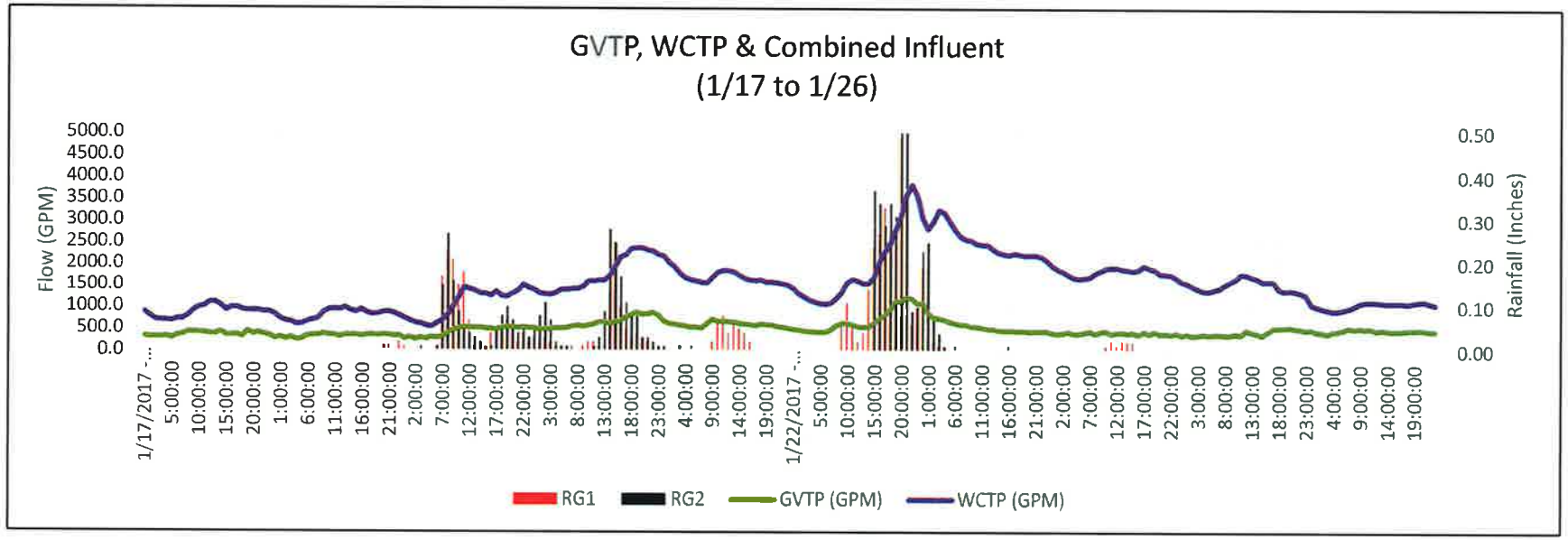
Exhibit 17

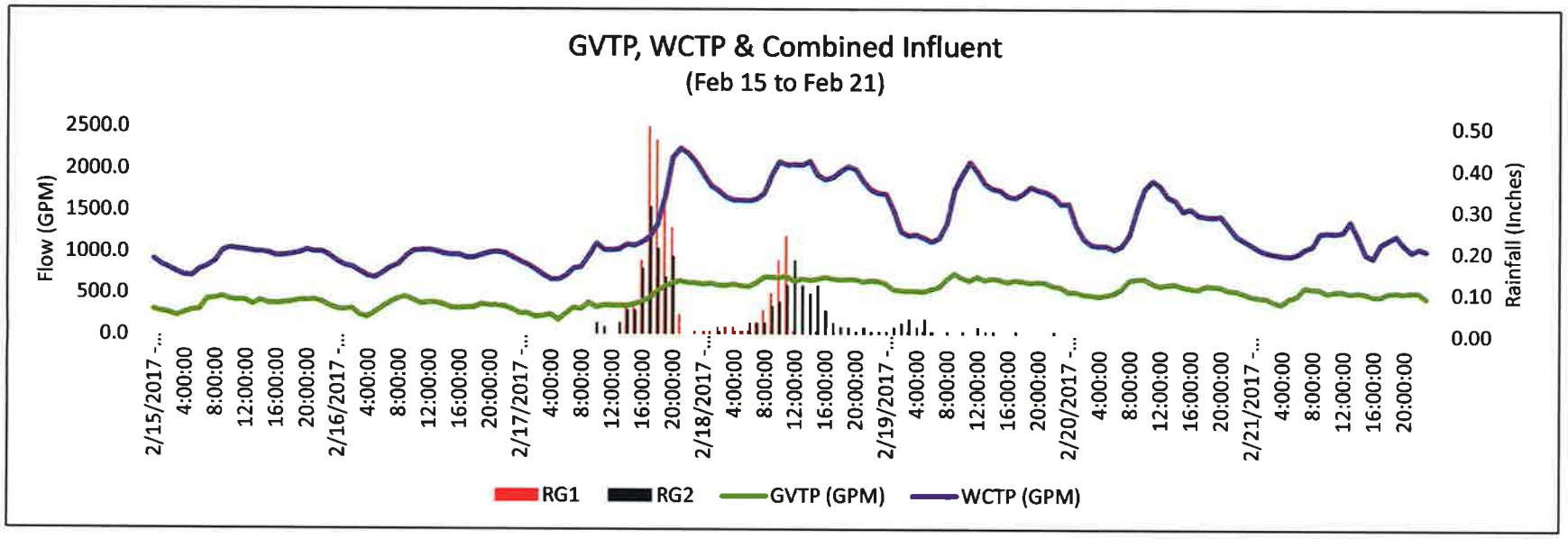


Annual Smoke Testing Locations

Exhibit 18

GRASS VALLEY AND WILLOW CREEK TREATMENT PLANT INFLOW METER GRAPHS





Summary Table of Inflow
Cost Effective Analysis For Rehabilitation

Exhibit 7

Basin 1: Grass Valley, Twin Peaks

Sub-Basin	Monitor	Ranking	Yrs Monitored (FYE)	Wet to Dry Ratio	Sewer Length ft	Avg Dry Flow MGD	Avg Wet Flow MGD	Peak Inflow GPD	Removable Reduction Factor	Removable Inflow GPD	Treatment & Transport Cost $	Type of Defect	Rehab Method	Rehab Life Yrs	Rehab Cost $	Cost Effective ≥1	Comments
1-01		5	13 - 17														
	Brentwood	low	13 - 16	1.79	7,720	0.007	0.012	5,400	40%	2,160	3,797		Repair	10	15,440	0.25	(1)
	Brentwood North	low	13	1.96	7,623	0.006	0.011	5,400	40%	2,160	3,797		Repair	10	15,246	0.25	
	Trinity	low	13	1.14	6,880	0.005	0.006	700	40%	280	492		Repair	10	13,760	0.04	
	Station 33	low	13	1.33	315,339	0.045	0.060	15,000	50%	7,500	13,183		Repair	10	630,678	0.02	(15)
	Brentwood A	med	17	2.22	42,899	0.036	0.080	44,000	40%	17,600	30,936		Repair	10	85,798	0.36	(2)
1-02		1	13, 17														
	Golf Course West	high	13	5.00	16,181	0.010	0.050	40,000	40%	16,000	28,123		Repair	10	32,362	0.87	
	Station 33	low	13	1.33	315,339	0.045	0.060	15,000	50%	7,500	13,183		Repair	10	630,678	0.02	(15)
	Brentwood A	med	17	2.22	42,899	0.036	0.080	44,000	40%	17,600	30,936		Repair	10	85,798	0.36	(3)
1-03		3	13														
	Station 33	low	13	1.33	315,339	0.045	0.060	15,000	50%	7,500	13,183		Repair	10	630,678	0.02	(15)
	Golf Course East	med	13	1.90	10,793	0.021	0.040	19,000	40%	7,600	13,359		Repair	10	21,586	0.62	
1-04		4	13, 17														
	Golf Course East	med	13	1.90	10,793	0.021	0.040	19,000	40%	7,600	13,359		Repair	10	21,586	0.62	
	Alpine Camp	med	13	2.20	14,766	0.010	0.022	12,000	40%	4,800	8,437		Repair	10	29,532	0.29	
	Fairway	low	13	1.40	8,411	0.030	0.042	12,000	40%	4,800	8,437		Repair	10	16,822	0.50	
	Club House East	low	13 - 17	1.24	30,200	0.030	0.038	7,330	30%	2,199	3,865		Repair	10	60,400	0.06	(4)
	Station 33	low	13	1.33	315,339	0.045	0.060	15,000	50%	7,500	13,183		Repair	10	630,678	0.02	(15)
	Brentwood B	low	17	1.63	41,631	0.008	0.013	5,000	40%	2,000	3,515		Repair	10	83,262	0.04	(5)
1-05		6	13 - 17														
	Station 33	low	13	1.33	315,339	0.045	0.060	15,000	50%	7,500	13,183		Repair	10	630,678	0.02	(15)
	Club House West	low	13 - 16	1.14	41,000	0.033	0.037	4,600	35%	1,610	2,830		Repair	10	82,000	0.03	
1-06		2	13, 16														
	Daley Canyon	med	13	2.00	27,143	0.015	0.030	15,000	30%	4,500	7,910		Repair	10	54,286	0.15	
	Willow Creek	high	16 - 17	1.84	287,776	0.437	0.803	366,500	50%	183,250	322,099		Repair	10	575,552	0.56	

Monitor covers multiple sub-basins

Summary Table of Inflow
Cost Effective Analysis For Rehabilitation

Exhibit 7

Basin 2: Blue Jay to Dam

Sub-Basin	Monitor	Ranking	Yrs Monitored (FYE)	Wet to Dry Ratio	Sewer Length ft	Avg Dry Flow MGD	Avg Wet Flow MGD	Peak Inflow GPD	Removable Reduction Factor	Removable Inflow GPD	Treatment & Transport Cost $	Type of Defect	Rehab Method	Rehab Life Yrs	Rehab Cost $	Cost Effective >1	
2-01		XX	13 - 16														
	BJ Trailer Park	high	13	1.40	66,684	1.500	2.100	600,000	50%	300,000	2,636,550		Slipline	50	4,334,460	0.61	(17)
	Arturos	low	14 - 16	1.29	1,740	0.007	0.009	2,000	40%	800	1,406		Repair	10	3,480	0.40	
	Willow Creek	high	16 - 17	1.84	287,776	0.437	0.803	366,500	50%	183,250	322,099		Repair	10	575,552	0.56	
2-02		3	14 - 17														
	Cedar Circle	high	14 - 16	2.39	12,900	0.006	0.013	7,800	70%	5,460	47,985		Replace	50	1,290,000	0.04	
	Willow Creek	high	16 - 17	1.84	287,776	0.437	0.803	366,500	50%	183,250	1,610,493		Rehab	50	2,158,320	0.75	
	Cedar Circle A	high	17	3.33	4,381	0.003	0.010	7,000	70%	4,900	43,064		Replace	50	438,100	0.10	
	Cedar Circle B	high	17	2.73	6,586	0.005	0.013	8,337	70%	5,836	51,289		Replace	50	658,600	0.08	
2-03		4	14 - 17														
	Rainbow Creek	low	14 - 16	1.28	9,500	0.011	0.014	3,100	30%	930	1,635		Repair	10	19,000	0.09	
	Cottage Grove Ck	med	14 - 16	1.71	26,800	0.023	0.040	16,650	30%	4,995	8,780		Repair	10	53,600	0.16	
	Willow Creek	high	16 - 17	1.84	287,776	0.437	0.803	366,500	50%	183,250	1,610,493		Rehab	50	2,158,320	0.75	
	Cottage Grove A	low	17	1.67	11,180	0.004	0.006	2,400	35%	840	1,476		Repair	10	22,360	0.07	
	Cottage Grove B	low	17	1.21	9,246	0.026	0.032	5,530	35%	1,936	3,402		Repair	10	18,492	0.18	(6)
2-04		XX	16 - 17														
	Beaver	med	16 - 17	1.79	262,293	0.273	0.488	215,000	50%	107,500	188,953		Repair	10	524,586	0.36	
2-05		7	14 - 16														
	Rainbow Creek	low	14 - 16	1.28	9,500	0.011	0.014	3,100	30%	930	1,635		Repair	10	19,000	0.09	
	Willow Creek	high	16 - 17	1.84	287,776	0.437	0.803	366,500	50%	183,250	1,610,493		Rehab	50	2,158,320	0.75	
2-06		6	14 - 17														
	Chalets	low	14 - 17	1.49	50,255	0.042	0.063	20,750	30%	6,225	10,942		Repair	10	100,510	0.11	(7)
	Beaver	med	16 - 17	1.79	262,293	0.273	0.488	215,000	50%	107,500	188,953		Repair	10	524,586	0.36	
2-07		8	14 - 17														
	GTO	low	14 - 16	1.29	13,700	0.005	0.007	1,500	30%	450	791		Repair	10	27,400	0.03	
	Beaver	med	16 - 17	1.79	262,293	0.273	0.488	215,000	50%	107,500	188,953		Repair	10	524,586	0.36	
	GTO B	low	17	1.22	7,023	0.002	0.002	330	30%	99	174		Repair	10	14,046	0.01	(8)

Summary Table of Inflow
Cost Effective Analysis For Rehabilitation

Exhibit 7

Basin 2: Blue Jay to Dam (continued)

Sub-Basin	Monitor	Ranking	Yrs Monitored (FYE)	Wet to Dry Ratio	Sewer Length ft	Avg Dry Flow MGD	Avg Wet Flow MGD	Peak Inflow GPD	Removable Reduction Factor	Removable Inflow GPD	Treatment & Transport Cost $	Type of Defect	Rehab Method	Rehab Life Yrs	Rehab Cost $	Cost Effective < 1	
2-08		2	14 - 17														
	Potomac Creek	low	14 - 16	1.42	5,200	0.008	0.011	3,300	40%	1,320	2,320		Repair	10	10,400	0.22	
	John Muir	high	15 - 16	5.04	17,900	0.047	0.237	190,000	40%	76,000	133,585		Repair	10	35,800	3.73	
	Beaver	med	16 - 17	1.79	262,293	0.273	0.488	215,000	50%	107,500	188,953		Repair	10	524,586	0.36	
	John Muir A	med	17	1.98	15,351	0.011	0.021	10,330	40%	4,132	7,263		Repair	10	30,702	0.24	
	John Muir B	low	17	1.29	6,654	0.004	0.005	1,000	40%	400	703		Repair	10	13,308	0.05	(9)
2-09		1	14 - 17														(10)
	Emerald Bay	high	14 - 16	1.57	69,900	0.008	0.013	4,700	50%	2,350	20,653		Replace	50	3,000,000	0.01	(11)
	Beaver	med	16 - 17	1.79	262,293	0.273	0.488	215,000	50%	107,500	188,953		Repair	10	524,586	0.36	
	Emerald Bay A	low	17	1.27	27,189	0.007	0.009	2,000	30%	600	1,055		Repair	10	54,378	0.02	
	Emerald Bay B	high	17	2.13	25,037	0.053	0.112	59,400	70%	41,580	365,426		Replace	50	2,503,700	0.15	(12)
2-10		5	14 - 17														
	Emerald Creek	low	14 - 16	1.42	9,053	0.013	0.019	5,500	30%	1,650	2,900		Repair	10	18,106	0.16	
	Beaver	med	16 - 17	1.79	262,293	0.273	0.488	215,000	50%	107,500	188,953		Repair	10	524,586	0.36	
	Emerald Bay A	low	17	1.27	27,189	0.007	0.009	2,000	30%	600	1,055		Repair	10	54,378	0.02	
	Emerald Creek B	low	17	1.61	7,953	0.005	0.008	2,830	70%	1,981	17,410		Replace	50	795,300	0.02	(13)

Monitor covers multiple sub-basins

Summary Table of Inflow
Cost Effective Analysis For Rehabilitation

Exhibit 7

Basin 3: Northwest

Sub-Basin	Monitor	Ranking	Yrs Monitored (FYE)	Wet to Dry Ratio	Sewer Length ft	Avg Dry Flow MGD	Avg Wet Flow MGD	Peak Inflow GPD	Removable Reduction Factor	Removable Inflow GPD	Treatment & Transport Cost $	Type of Defect	Rehab Method	Rehab Life Yrs	Rehab Cost $	Cost Effective >1	
3-01																	
	TBD									-							(19)
3-02		3															
	Station 14	med	15 - 17	1.61	14,185	0.014	0.022	8,330	40%	3,332	5,857		Repair	10	28,370	0.21	
3-03																	
	Station 33	low	13	1.33	315,339	0.045	0.060	15,000	50%	7,500	13,183		Repair	10	630,678	0.02	(15)
3-04		1															
	Station 33	low	13	1.33	315,339	0.045	0.060	15,000	50%	7,500	13,183		Repair	10	630,678	0.02	(15)
	Oakmont	high	15 - 16	1.51	17,000	0.075	0.113	38,000	30%	11,400	20,038		Repair	10	34,000	0.59	
3-05																	
	Willow Creek	high	16 - 17	1.84	287,776	0.437	0.803	366,500	50%	183,250	1,610,493		Rehab	50	2,158,320	0.75	
3-06		2															
	Golf Course East	med	13	1.90	10,793	0.021	0.040	19,000	40%	7,600	13,359		Repair	10	21,586	0.62	
	Station 33	low	13	1.33	315,339	0.045	0.060	15,000	50%	7,500	13,183		Repair	10	630,678	0.02	(15)
	Golf Course Way	med	15	8.40	10,600	0.005	0.042	37,000	25%	9,250	16,259		Repair	10	21,200	0.77	
3-07																	
	TBD									-							(18)
3-08																	
	Willow Creek	high	16 - 17	1.84	287,776	0.437	0.803	366,500	50%	183,250	1,610,493		Rehab	50	2,158,320	0.75	
3-09																	
	Willow Creek	high	16 - 17	1.84	287,776	0.437	0.803	366,500	50%	183,250	1,610,493		Rehab	50	2,158,320	0.75	
3-10																	
	Willow Creek	high	16 - 17	1.84	287,776	0.437	0.803	366,500	50%	183,250	1,610,493		Rehab	50	2,158,320	0.75	

Monitor covers multiple sub-basins

Summary Table of Inflow
Cost Effective Analysis For Rehabilitation

Exhibit 7

Basin 4: Northeast

Sub-Basin	Monitor	Ranking	Yrs Monitored (FYE)	Wet to Dry Ratio	Sewer Length ft	Avg Dry Flow MGD	Avg Wet Flow MGD	Peak Inflow GPD	Removable Reduction Factor	Removable Inflow GPD	Treatment & Transport Cost $	Type of Defect	Rehab Method	Rehab Life Yrs	Rehab Cost $	Cost Effective >1	
4-01		1															
	Willow Creek	high	16 - 17	1.84	287,776	0.437	0.803	366,500	50%	183,250	1,610,493		Rehab	50	2,158,320	0.75	
	ALA Trail 43	med	16	1.86	25,900	0.035	0.065	30,000	40%	12,000	21,092		Repair	10	51,800	0.41	
	ALA Trail 43 A	med	17	1.73	6,754	0.016	0.028	11,830	40%	4,732	8,317		Repair	10	13,508	0.62	
	ALA Trail 43 B	med	17	1.93	18,986	0.010	0.020	9,500	40%	3,800	6,679		Repair	10	37,972	0.18	
4-02																	
	TBD									-							(18)
4-03																	
	Willow Creek	high	16 - 17	1.84	287,776	0.437	0.803	366,500	50%	183,250	1,610,493		Rehab	50	2,158,320	0.75	
4-04																	
	TBD								50%								(18)
4-05																	
	Beaver	med	16 - 17	1.79	262,293	0.273	0.488	215,000	50%	107,500	188,953		Repair	10	524,586	0.36	
4-06		2															
	SH 173	med	16	1.60	50,900	0.053	0.085	32,000	40%	12,800	22,499		Repair	10	101,800	0.22	
	SH 173 B	med	17	2.14	17,476	0.005	0.010	5,500	40%	2,200	3,867		Repair	10	34,952	0.11	
4-07		3															
	SH 173	med	16	1.60	50,900	0.053	0.085	32,000	40%	12,800	22,499		Repair	10	101,800	0.22	
	SH 173 A	med	17	1.61	16,549	0.016	0.025	9,500	40%	3,800	6,679		Repair	10	33,098	0.20	

Monitor covers multiple sub-basins

Summary Table of Inflow
Cost Effective Analysis For Rehabilitation

Exhibit 7

Treatment Plants

Sub-Basin	Monitor	Ranking	Yrs Monitored (FYE)	Wet to Dry Ratio	Sewer Length ft	Avg Dry Flow MGD	Avg Wet Flow MGD	Peak Inflow GPD	Removable Reduction Factor	Removable Inflow GPD	Treatment & Transport Cost $	Type of Defect	Rehab Method	Rehab Life Yrs	Rehab Cost $	Cost Effective >1	
N/A	Grass Valley TP		16 - 17	1.66	345,316	0.451	0.748	297,667	50%	148,834	261,605		Repair	10	690,632	0.38	(14)
N/A	Willow Creek TP		16 - 17	1.72	688,289	1.080	1.855	775,163	50%	387,582	3,406,260		Rehab	50	5,162,168	0.66	(16)

Monitor covers multiple sub-basins

Comments, Assumptions and Unit Values

Exhibit 7

Assumptions	
6.51	FY 15/16 T&T Cost/1,000 gallons
27	Average number of days precipitation

Note	Comments
(1)	removed 3/2/17, used data from 2016 report
(2)	installed 3/2/17, used 3/22/17 for AWW, guesstimate on linear feet
(3)	installed 3/2/17, used 3/22/17 for AWW, guesstimate on linear feet
(4)	inflow reduced
(5)	installed 3/2/17, used 3/22/17 for AWW, guesstimate on linear feet
(6)	inflow reduced
(7)	inflow reduced
(8)	inflow reduced
(9)	inflow reduced
(10)	age, maintenance history, proximity to lake.
(11)	Palisades
(12)	guesstimate on linear feet
(13)	guesstimate on linear feet
(14)	1-01, 1-02, 1-03, 1-04, 1-05, 3-01, 3-02, 3-06
(15)	used same linear feet as GVWWTP
(16)	1-06 / 2-01 / 2-02 / 2-03 / 2-04 / 2-05 / 2-06 / 2-07 / 2-08 / 2-09 / 2-10 / 3-05 / 3-07 / 3-08 / 3-09 / 3-10 / 4-01 / 4-02 / 4-03 / 4-04 / 4-05 / 4-06 / 4-07
(17)	flow data believed to be inaccurate
(18)	Sub basin represented by WCTP flow monitor. Monitor covers too large of area to accurately reflect this basin. Further monitoring to be done.
(19)	Sub basin represented by GVTP flow monitor. Monitor covers too large of area to accurately reflect this basin. Further monitoring to be done.