



## 2009 ANNUAL CSO REPORT

PREPARED FOR  
THE WASHINGTON STATE DEPARTMENT OF ECOLOGY

May 14, 2010

TO COMPLY WITH  
CONDITION S11 OF NPDES PERMIT NO. WA-0023973,  
WAC 173-245-090(1),  
and  
AGREED ORDER NO. 3853

*Terri L. Partch*

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Prepared By  
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For Approved by  
Kathryn Neal, P.E., Engineering Manager

## **A. SUMMARY**

This Report addresses the period from January 1, 2009 through December 31, 2009 with regards to the reporting requirements in the NPDES Permit. The City has four Combined Sewer Overflow (CSO) sites. In November 2008, the Department of Ecology was formally notified of an interruption in CSO flow monitoring. In April 2009, the City contracted for monitoring services with a new provider, ADS Environmental Services. Monitoring stations were installed at all CSO weir manholes by October 2009. At that time data collection resumed, and also automated alarms and notification of overflow events resumed. Since then, the City has been working closely with ADS to verify the accuracy of reported flows, evaluating data, adjusting the monitoring configurations, and adding additional instrumentation where necessary.

Ecology has been included in some of the ongoing discussions with ADS. A summary of the issues and current status, as of May 2010, at each CSO site is provided in Section B of this report. The current monitoring configurations and measured drawings of each site are attached in Appendix D.

The four CSO discharge outfalls are as follows:

- 006 - Oak St. & Railroad Ave., discharges into Port Angeles Harbor
- 007 - Laurel St. & Railroad Ave., discharges into Port Angeles Harbor
- 008 - Lincoln St. near First St., discharges into Peabody Creek culvert which discharges into Port Angeles Harbor
- 010 - Francis Street Park, discharges into Port Angeles Harbor

Appendix A is a map showing the locations of the four CSO sites. Appendix B contains tables detailing the flow data for 2009.

Flow data is summarized and discussed in Section B. Dry weather overflows were recorded at sites 6 and 7 in December of 2009, which is an unprecedented occurrence. After review of NOAA's tidal data, it is believed that high tides on those dates were causing reverse flows in the outfall pipes and manholes, resulting in false alarms. Additional monitoring equipment has been added to the sanitary manhole at CSO site 6 to monitor sanitary flow over the weir and the velocity meters at both sites were changed in December to detect bidirectional flow. Therefore the calculated overflow from sites 6 and 7 will only be based on positive velocity values. Between the months of October through December of 2009, ADS has recorded 107 CSO events with a total volume of 31.18 million gallons.

Sections C and D of the report list CSO reduction accomplishments in 2009 and actions planned for 2010. Section E documents the City's compliance with the nine minimum controls cited in the NPDES Permit 23973, which was re-issued July 15, 2008.

Section F of this Report addresses the following issues, which are specified in Agreed Order No. 3853:

- (1) the progress made to comply with terms of this Agreed Order over the previous year,

- (2) any deviations from the schedule referenced above,
- (3) a plan for bringing the project back on-schedule if necessary, and
- (4) any anticipated deviations from the schedule for the coming year.

**B. CSO DISCHARGES – DATE, DURATION AND VOLUME**

Appendix B includes tables that detail for each site the date, total volume and duration for each CSO event. The City’s former CSO flow monitoring contractor, Geotivity, unilaterally stopped providing service in July of 2008. The City investigated purchasing, installing and maintaining our own monitors as well as having another company attempt to use the existing Geotivity monitors. Ultimately the City decided to request proposals for monitoring equipment and services. The process was initiated in March of 2009, and the City signed a contract with ADS LLC in September 2009. For these reasons, no data is available from January through September, 2009.

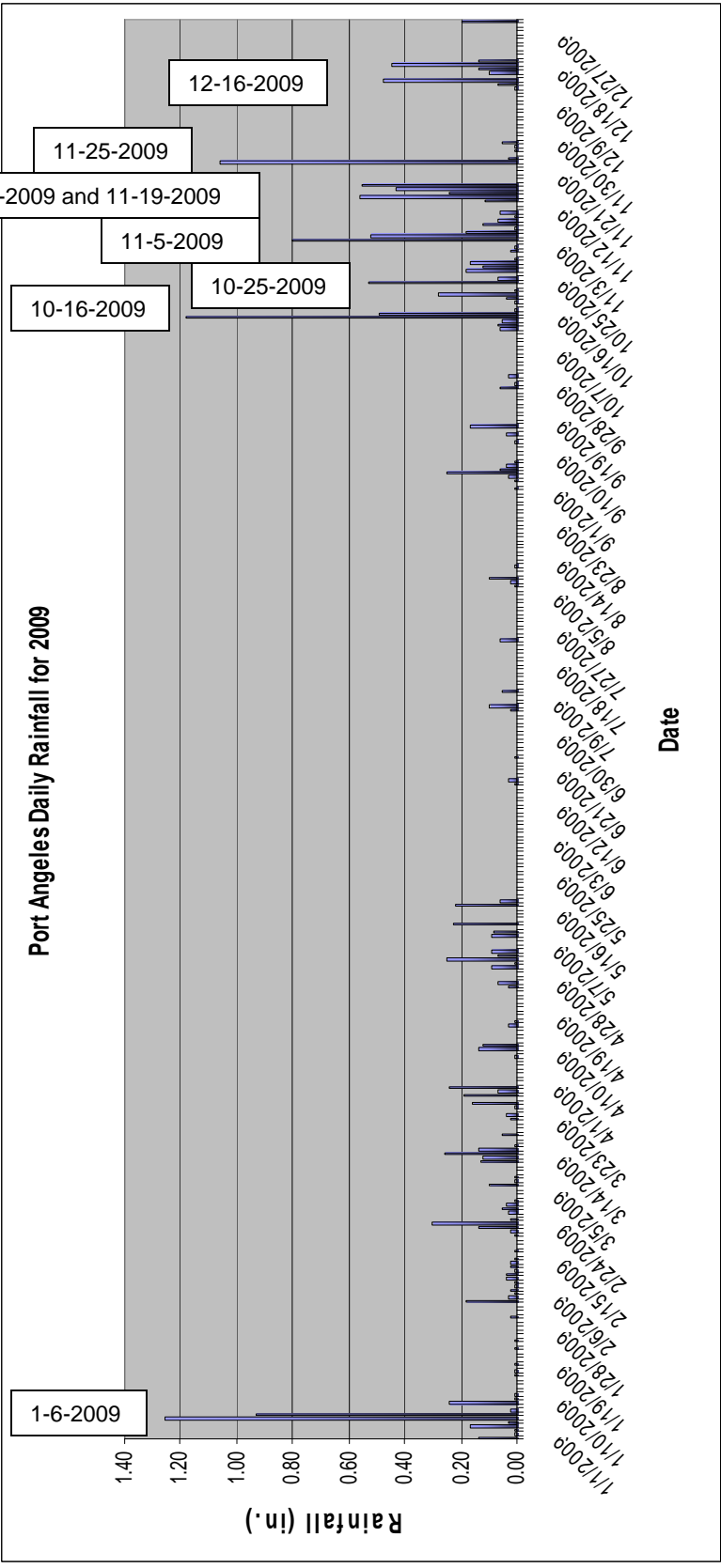
Table 1 below summarizes the total number of CSO events and volume for each of the four remaining CSO sites over the last seven years, including the incomplete and potentially incorrect data from 2008 and the incomplete data from 2009. Table 2, on the following page, shows daily precipitation for 2009 as measured at the wastewater treatment plant. The rainfall data loosely indicates that rainstorms occurred in January 2009 that likely caused wet weather overflows that were not recorded. Smaller-volume rain events that may have resulted in data losses occurred in February, March, April and May.

**Table 1 – Total Events and Volumes for Each CSO Site, 2003-2009**

site no.	2003		2004		2005	
	events	volume	events	volume	events	volume
006	6	1,166,421	11	99,169	30	2,157,945
007	10	5,958,953	15	586,688	37	15,143,072
008	2	1,201,531	0	0	9	45,767
010	12	21,400,462	3	1,096,603	34	15,788,946
Total	30	29,727,367	29	1,782,460	110	33,135,730

site no.	2006		2007		2008		2009	
	events	volume	events	volume	events	volume	events	volume
006	29	4,919,933	19	2,557,315	13	5,607,660	38	6,671,838.00
007	30	17,033,788	27	13,250,761	12	1,772,169	26	10,905,782.00
008	9	948,030	13	310,213	1	99	14	2,196,099.00
010	20	52,614,746	10	28,014,893	11	2,159,819	28	11,301,856.00
Total	88	75,516,497	69	44,133,182	37	9,539,747	106	31,075,575.00

Port Angeles Daily Rainfall for 2009



## RECENT HISTORY

Between 2003 and 2008, the City had a service contract with Geotivity to monitor overflows at these sites, to automatically report overflow events, and to post data on Geotivity's web server. In mid-2008 the data from Geotivity began to show faults, and by August City staff was unable to obtain service for the monitors or corrections to obviously erroneous data postings. In September the website went down and communication was severed, and the City was informed that the company had gone into receivership. In November, 2008, the Department of Ecology was formally notified of the interruption in CSO flow monitoring (see Appendix C).

Attempts to trouble-shoot the flow monitors and retrieve data over the winter of 2008 - 2009 with the help of equipment suppliers and service technicians were unsuccessful. In March of 2009, the City issued a Request for Proposals (RFP) for a new CSO Flow Monitoring Contract to re-establish reliable data. On April 15<sup>th</sup>, 2009, the City chose ADS Environmental Services to provide CSO flow monitoring services, alarm notification and data validation services for the City. On September 15<sup>th</sup>, 2009 the City signed a CSO site monitoring contract with ADS Environmental Services. New monitors were installed in all four stations on September 29<sup>th</sup> and 30<sup>th</sup>. Since that date, ADS and the City have been evaluating data, adjusting the monitoring configurations and adding additional monitoring equipment at the upstream weir at CSO sites 6 and 10 respectively to compensate for reverse flow occurring on the downstream storm sewer side.

## CURRENT STATUS

The current monitoring configurations and detailed drawings of each site are attached in Appendix D.

CSO site 6 seems to have a stable monitoring configuration.

At CSO site 7, further adjustment is required because it appears that unusual interference with the flap gate is occurring. The flap gate is closing under high stormwater flow conditions, and forcing CSO overflows back into the system, to CSO site 6 or to sewer pump station 4. City crews intend to remove the old flap gate and monitor this to see if the interference is eliminated.

At CSO site 8, it now seems that we have reverse flow occurring under high flow conditions. ADS installed additional monitoring equipment in the sanitary manhole on April 28, 2010 to detect flow over the weir. Our consultant has noted that we have an irregularly shaped weir at this location and is evaluating how to best calculate the overflow volumes for the site.

At CSO site 10, ADS has placed both upstream and downstream monitoring equipment assemblies and is comparing and evaluating data from both. We have significant stormwater influence at this site, causing reverse flows to occur. At this site also, our consultant has noted that we have an irregularly shaped weir and is evaluating how to best calculate the overflow volumes for the site in the interim period before this location is re-configured as part of the CSO Phase 1 Projects scheduled to begin construction in 2011.

At all CSO sites it also appears that we occasionally have problems with the wireless connectivity, which affects our automatic alarming and notification. We plan to address the connectivity issues by the end of 2010 by installing land lines to each site.

The data collected thus far, and the opportunity to place additional monitoring instruments to verify and calibrate the data, has led to a significantly better understanding of how these sites discharge and the impact of stormwater on the discharge points. As a result we have been able to see that these sites are far more complicated monitoring locations than originally thought. The accurate quantification and alarming of these sites is only possible with careful data review, analysis and system reconfiguration as necessary.

### **C. CSO REDUCTION ACCOMPLISHMENTS IN 2009**

The following projects were completed or initiated in 2009 as part of the City's CSO Reduction Plan:

1. In 2009, the City re-initiated design work on the suite of projects listed below. Design progress was stalled from June 2008 through March 2009 due to issues with the landowner, Rayonier Properties LLC. An access agreement with Rayonier was signed March 6, 2009 that allowed geotechnical site investigations and environmental permitting studies to continue. The consulting engineer agreement with Brown and Caldwell was renegotiated to accommodate a significant change in alignment and the schedule changes. The pipeline alignment across the Rayonier site has been adjusted to minimize wetland impacts and cultural resources issues. Site investigations to locate existing utilities, delineate wetlands, and conduct geotechnical borings occurred beginning August 2009. The geotechnical work was monitored by the City and Tribal archaeologists, and also monitored for soil contamination. The City has involved other stakeholders, including the Lower Elwha Klallam Tribe (LEKT), Harborworks Public Development Authority, Ennis Creek Technical Team (conceptual design of Ennis Creek and estuary restoration) and State agencies in the conceptual design. At the end of 2009, the City committed to a preferred horizontal and vertical alignment that balances the need to minimize excavation with the anticipated needs of future users of the former Rayonier mill site. The design of these projects is scheduled to be completed before August 2010, with construction to be started by October 2011. The following are major elements of the Phase 1 Projects:
  - a. Construction of approximately 3,500 feet of 36-inch diameter sewer main, from the north end of Francis Street to the headworks of the City's wastewater treatment plant (WWTP).
  - b. Construction of two sewer force mains, one 24-inch and the other 30-inch, each approximately 8,000 feet long, from Oak Street to the WWTP. The force mains will replace one existing, undersized force main.

- c. Purchase of and construction of modifications to one existing 5 million gallon storage tank and associated property for use as a CSO storage facility, and design of flow diversion facilities will be constructed to manage flows into and out of the storage facility.
  - d. Construction of WWTP modifications and a new pipeline for final treated effluent disposal via one or both outfalls.
2. Continuation of the disconnection program (\$50,000 per year on average) for storm inlets/catch basins and incorporate disconnections into adjacent public works projects.

#### **D. CSO PROJECTS PLANNED FOR 2010**

In 2010, the City plans to finalize the design of the suite of projects listed above under Phase 1 of the CSO Reduction Plan. Contract documents will be prepared, and construction estimates will be refined. As of May, 2010 the 60% design is being reviewed by the City.

Construction is dependent on securing property rights from Rayonier, and on securing an additional \$6 - \$10 million in funding. The City is pursuing negotiations with Rayonier and intends to apply for an SRF loan in October 2010.

There will also be a continuation of the disconnection program (\$50,000 per year on average) for storm inlets/catch basins and incorporate disconnections into adjacent public works projects.

In addition, the flow monitoring at the four CSO sites will continue through the contract with ADS Environmental Services. ADS will continue to monitor each City overflow site, evaluate the hydraulic conditions and determine the best flow meter configuration to receive reliable data. Flow data will be validated as it is received, real time overflow alarms will be sent out and ADS will continue to host the CSO flow information on a website.

#### **E. NINE MINIMUM CONTROLS**

The nine minimum controls as described in S11.B.1 to 9 of the permit are being followed as described in the Port Angeles WWTP Combined Sewer Overflow Pollution Prevention Plan, dated September 2004, which was submitted per item 7 of order DE 04WQSR-6042. The Plan was submitted along with a revised Sampling and Analysis Plan per item 5 of the same order. Ecology has acknowledged receipt of these documents and that they meet the requirements in the order.

The following is a summary of activities in 2009 supporting the nine minimum controls:

1. Proper operation and regular maintenance program for the sewer system

Wastewater Collections and WWTP staff have performed maintenance at all the lift stations according to the work orders set up in the City of Port Angeles HTE software program. Visual inspections of CSO outfalls, regulator structures, and signs are also tracked in the City of Port Angeles HTE software. WWTP Staff are using CSO survey and inspection forms to record information found after each overflow event that occurs during our regular work week, as per the sampling plan. Work orders to perform these tasks print out periodically at the WWTP office and are forwarded to work crews. Finished work orders are used to update the HTE work orders system maintained by WWTP staff. Finished work orders are then filed in the appropriate year 'CSO field reports' file in the Superintendent's office. The WWTP Superintendent also collects monthly data from the Wastewater Collections crew. In 2009 82,748 feet of sanitary sewer were jetted and 820 feet of storm sewer were jetted. No sanitary sewer root foaming was performed in 2009.

2. Maximum use of the collection system for storage

The City has not added any significant storage to the collection system in 2009. The collection system does not have any appreciable oversized sewers or wet wells at pump stations to provide storage capacity.

3. Review and modification of pretreatment requirements to assure CSO impacts are minimized

In 2009, the WWTP received 2.71 million gallons of sewage from septage pumpers through the use of long term contracts and annual permits. This is a decrease from the volume received in 2008, 4.04 million gallons. The WWTP continues to take pumper waste from restaurant grease separators. The WWTP treated 4.61 million gallons of leachate from the Rayonier landfill and 2.68 million gallons of leachate from the City of Port Angeles landfill in 2009. The Port Angeles landfill site was completely capped in 2007. Since the final capping of the landfill, flow of leachate has dropped from the 5.46 million gallons treated in 2007. The 2009 Pretreatment Report was mailed to Ecology on March 18, 2010 and it reflected no new Industrial Water Acceptance (IWA) permits.

There were no enforcement actions required for the pretreatment program this year. The WWTP had no permits in effect in 2009. None of the local limits in the City's sewer ordinance were exceeded. The WWTP has not had any biological upsets or any pass through events. Sampling and monitoring of CSO sites have shown no appreciable impacts as staff have noted on inspection forms for the individual sites kept at the WWTP.

4. Maximization of flow to the publicly owned treatment works (POTW) for treatment

The WWTP has had all units on line and taken the maximum flow delivered from the sanitary sewer system in 2009. The average flow for 2009 was 2.34 MGD with a peak daily flow of 8.64 MGD.

## 5. Prohibition of CSOs during dry weather

Dry weather overflows are treated like a spill investigation and a City of Port Angeles "Pollution Investigation Checklist" is always used to report these. There were 23 dry weather overflows recorded in 2009 at CSO sites 6 and 7. However, these have occurred under high tide conditions +8.0 feet MLLW and are likely due to reverse flow. Monitoring equipment has been adjusted at both sites to avoid false reporting.

## 6. Control of solid and floatable materials in CSOs

WWTP staff inspects the baffles and discharge areas after each overflow event. Survey reports show the baffles have successfully kept the floatables and solids out of the overflow discharge pipes. Inspection of the beach areas has detected no floatables or solids. These CSO survey forms are kept in the lab at the WWTP.

## 7. Pollution Prevention

In 2009, the City of Port Angeles Street and Parks Division removed approximately 746 cubic yards of material through street sweeping maintenance. The sweeper was operated over a total of 7,729 miles of road surface. Catch basin cleaning (by eduction) was also continued through 2009. In 2009 1,039 catch basins were educted and 80.5 cubic yards of material was removed. Sweepings, educted material and construction spoil were transferred to a decant facility at the Port Angeles Landfill site. City Street/Parks staff has also maintained the daily pickup of the downtown receptacles. Funding for the City of Port Angeles Pollution Prevention Plan has been maintained through sewer and storm water billing to provide these services.

## 8. Public notification to ensure that the public receives adequate notification of CSO occurrences and impacts

ADS and the City restarted the internet notification system that emailed stakeholders whenever a CSO event began or ended beginning in October of 2009. Due to the difficulty of obtaining accurate data from the City's four CSO sites, automated alarming has been discontinued. ADS is currently evaluating all alarm signals from the meters and then passing on an alarm notification to the City when the alarm and the data have been validated. The City then forwards them to the stakeholder group. The CSO notification signs located at each of the four remaining discharge sites, as well as at Hollywood Beach and the City Pier, have been maintained. The signs are being checked by the Wastewater Collection crew and a record of the inspection is entered using the HTE monthly work orders. Signs that are destroyed or missing are promptly replaced by WWTP staff. In addition, there are handouts explaining the status of the City of Port Angeles CSO program at the front counter where citizens pay bills and take out permits. This information was mailed in the September 2009 utility billing. We also have that information available on the City of Port Angeles web site located at [www.cityofpa.us](http://www.cityofpa.us).

9. Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls

As of October 1, 2004, WWTP staff has been using the CSO survey and inspection forms to record information regarding each overflow event, as per the sampling plan. This sampling and survey information is kept in a binder in the WWTP Lab and is updated anytime a new survey or sampling event is performed. Since July 2008, CSO data is reported to Ecology each month with the DMRs. Table 2 summarizes CSO sampling data gathered in 2009.

**Table 2 - 2009 CSO DATA City of Port Angeles**

Site	Date	TSS mg/L	Fecal per 100 mL	BOD mg/L
6 Manhole (MH)	1/6/2009	79	2000000	34
6 Strait (STR)	1/8/2009		>4000	
6MH	2/25/2009	176	19500000	51
6 STR	2/25/2009	202	3500	
6 MH	11/6/2009	57	E18000000	35.5
6 STR	11/6/2009	510	>2000	
7 MH	1/6/2009	3053	24000000	30
7 STR	1/8/2009		>4000	
7 MH	2/25/2009	89	0	45
7 STR	2/25/2009	318	E13600	
7 MH	11/6/2009	63	30000000	34.2
7 STR	11/6/2009	574	>2000	
8 MH	1/7/2009	101	420000	9
8 STR	1/8/2009		613	
8 MH	11/6/2009	43	E67000000	37.8
8 STR	11/6/2009	165	E1520	
10 MH	1/7/2009	113	3500000	45
10 STR	1/8/2009		E10	
10 MH	2/25/2009	208	1000000	3
10 STR	2/25/2009	224	28	
10 MH	11/6/2009	73	260000000	46.4
10 STR	11/6/2009	403	220	

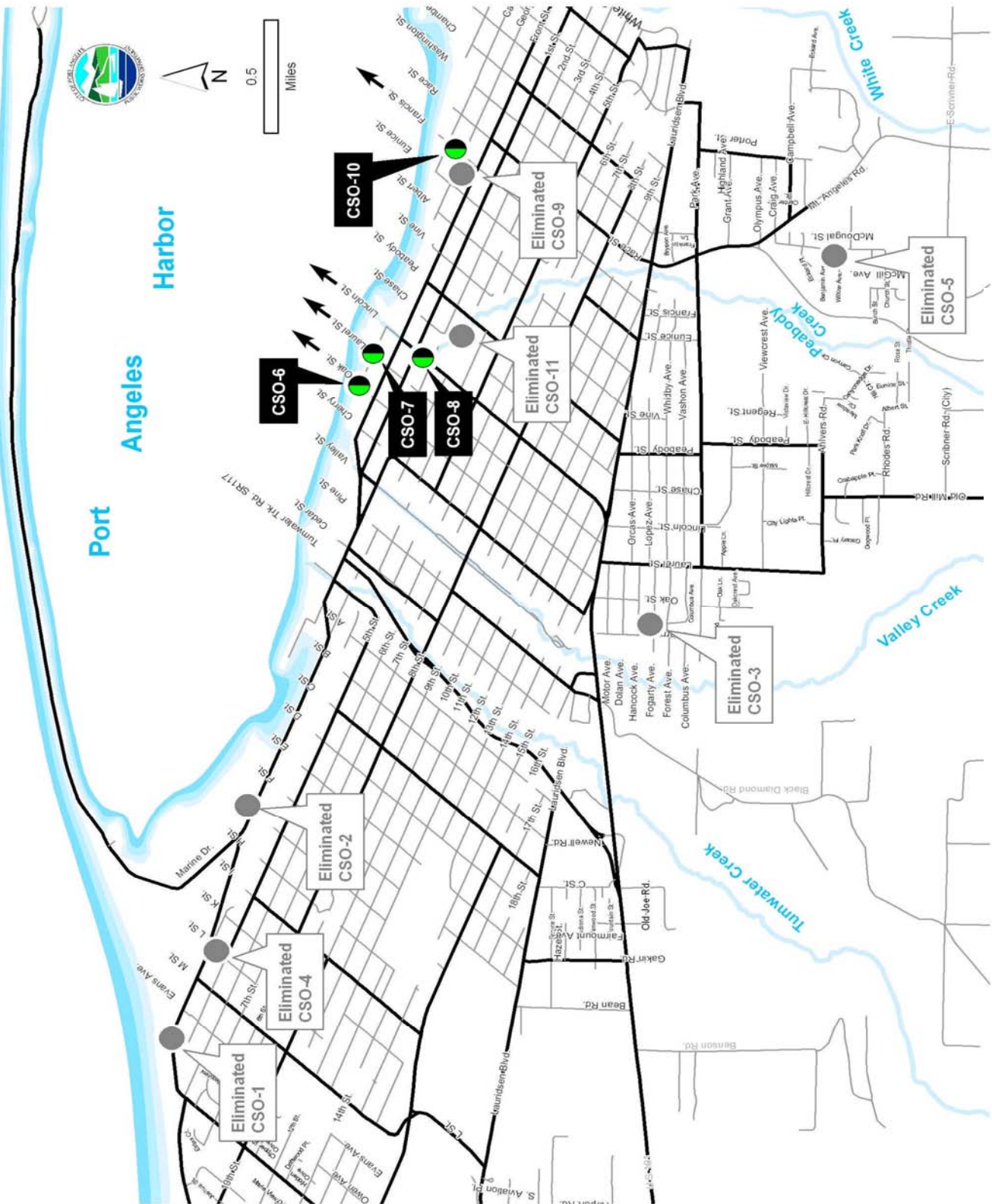
## **F. AGREED ORDER NO. 3853**

This Section addresses the following, which under Agreed Order No. 3853, the City agreed to address on a yearly basis: (1) the progress made to comply with terms of this Agreed Order over the previous year, (2) any deviations from the schedule referenced in the Department-approved General sewer Plan/Wastewater Facilities Plan, (3) a plan for bringing the project back on-schedule if necessary, and (4) any anticipated deviations from the schedule for the coming year. The following paragraphs address these four items:

As stated above in Section C, CSO Reduction Accomplishments in 2009, the City re-initiated the detailed design of the suite of projects to be constructed under Phase 1 of the CSO Reduction Plan. An Agreement with Rayonier was signed March 6, 2009, to allow site access for investigations and studies needed to advance the design work. In 2009 the City authorized an additional \$1,150,000 in engineering design costs. The pipeline alignment across the Rayonier site has been adjusted to minimize wetland impacts and cultural resources issues. Site investigations to locate existing utilities, delineate wetlands, and conduct geotechnical borings occurred beginning August 2009. The geotechnical work was monitored by the City and Tribal archaeologists, and also monitored for soil contamination. The City has involved other stakeholders, including the Lower Elwha Klallam Tribe (LEKT), Harborworks PDA, Ennis Creek Technical Team (conceptual design of Ennis Creek and estuary restoration) and State agencies in the conceptual design. At the end of 2009, the City committed to a preferred horizontal and vertical alignment that balances the need to minimize excavation with the anticipated needs of future users of the former Rayonier mill site. As of May 2010, the 60% plans and specifications are being reviewed by the City.

The City, as part of the aforementioned Agreed Order, committed to addressing CSOs as detailed in the approved 2006 CSO Reduction Facilities Plan/General Sewer Plan, which was subsequently amended in 2007 and approved by Ecology as well. The schedule in the amended General Sewer Plan requires that the City obtain ownership of the 5 million gallon Rayonier storage tank by December 31, 2007, and complete construction of the Phase 1 CSO Project by January 31, 2011. The City has not been able to obtain ownership of the storage tank to date.

City staff is currently in frequent discussions with the Toxics Cleanup Program staff of Ecology, with the goal of coordinating an eventual amendment to the General Sewer Plan (the process of which is spelled out in the Agreed Order) with the Water Quality Program staff at Ecology.



**Appendix A**  
**Port Angeles CSO Locations**

## Appendix B 2009 CSO Events at Each Site

**CSO 006  
Oak St. & Railroad Ave.**

CSO 006			
Start Date	Duration	Volume (gal)	Rainfall
January		no available data	
February		no available data	
March		no available data	
April		no available data	
May		no available data	
June		no available data	
July		no available data	
August		no available data	
September		no available data	
10/16/09	0.30	10250.00	0.06
10/17/09	15.97	362460.00	1.82
10/18/09	1.83	28.00	0.00
10/19/09	1.33	180.00	0.00
11/5/09	8.10	274722.00	0.70
11/6/09	7.08	178833.00	0.20
11/7/09	2.15	162315.00	0.28
11/13/09	0.20	4108.00	0.00
11/15/09	0.08	10.00	0.00
11/16/09	17.55	1739474.00	2.00
11/17/09	21.75	1671351.00	0.54
11/18/09	12.47	23303.00	0.28
11/19/09	23.97	1413713.00	1.38
11/20/09	23.97	429706.00	0.23
11/21/09	0.75	17.00	0.00
11/22/09	3.92	375.00	0.02
11/25/09	4.28	12057.00	0.28
11/26/09	4.50	194617.00	0.32
11/30/09	0.08	14.00	0.01
12/1/09	1.83	135.00	0.00
12/2/09	0.83	125.00	0.00
12/3/09	1.08	125.00	0.00
12/4/09	0.33	38.00	0.00
12/11/09	0.08	4.00	0.00
12/12/09	2.00	620.00	0.00

12/13/09	2.50	438.00	0.03
12/14/09	2.25	271.00	0.00
12/15/09	3.75	990.00	0.02
12/16/09	11.08	108253.00	0.61
12/17/09	2.08	215.00	0.00
12/18/09	1.13	76108.00	0.00
12/20/09	11.43	3769.00	0.37
12/21/09	3.92	771.00	0.09
12/26/09	1.08	101.00	0.00
12/27/09	2.00	188.00	0.00
12/28/09	2.67	365.00	0.00
12/29/09	2.33	365.00	0.00
12/29/09	2.75	1424.00	0.00
number of events	38		
total volume (gal)	6,671,838		



Font color indicates data recorded and reported by ADS





Font color indicates data loss

**CSO 007**  
**Laurel St. & Railroad Ave.**

CSO 007			
Start Date	Duration	Volume (gal)	Rainfall (in.)
January		no available data	
February		no available data	
March		no available data	
April		no available data	
May		no available data	
June		no available data	
July		no available data	
August		no available data	
September		no available data	
10/16/09	14.63	110406.00	0.44
10/17/09	16.27	1480200.00	0.36
10/26/09	5.70	19194.00	0.34
10/30/09	1.23	2128.00	0.10
11/5/09	10.62	248301.00	0.62
11/6/09	15.53	269331.00	0.60
11/7/09	6.92	210766.00	0.40
11/10/09	0.30	18716.00	0.07
11/13/09	2.18	13578.00	0.08
11/16/09	19.13	1509914.00	2.21
11/17/09	23.92	2453491.00	0.55
11/18/09	3.88	182115.00	0.23
11/19/09	23.97	1660921.00	1.38
11/20/09	23.97	1293006.00	0.23
11/21/09	0.56	15910.00	0.00
11/22/09	4.50	1854.00	0.02
11/25/09	5.88	189883.00	0.37
11/26/09	6.92	643506.00	0.38
11/30/09	0.87	18293.00	0.05
12/15/09	0.92	253.00	0.00
12/16/09	6.17	359935.00	0.48
12/18/09	0.92	5356.00	0.00
12/20/09	6.57	123976.00	0.31
12/21/09	8.28	71258.00	0.18
12/29/09	2.33	1243.00	0.00
12/30/09	2.92	2064.00	0.00
12/31/09	3.50	184.00	0.06
number of events	26		
total volume (gal)	10,905,782.00		

**CSO 008**  
**Lincoln St. near First St.**

CSO 008			
Start Date	Duration	Volume	Rainfall
January	no available data		
February	no available data		
March	no available data		
April	no available data		
May	no available data		
June	no available data		
July	no available data		
August	no available data		
September	no available data		
10/16/09	14.63	3717.00	0.44
10/17/09	15.67	87037.00	1.80
11/5/09	2.25	29853.00	0.39
11/6/09	15.08	21132.00	0.60
11/7/09	1.67	36199.00	0.27
11/16/09	17.72	762016.00	2.05
11/17/09	11.58	378109.00	0.49
11/18/09	0.25	5846.00	0.05
11/19/09	21.97	778195.00	1.20
11/20/09	2.92	40162.00	0.07
11/25/09	0.08	146.00	0.01
11/26/09	1.92	30179.00	0.22
12/16/09	0.67	181.00	0.09
12/20/09	0.23	23251.00	0.03
12/21/09	0.17	76.00	0.02
number of events	14		
total volume (gal)	2,196,099		

-  Font color indicates data recorded and reported by ADS
-  Font color indicates data loss

### CSO 010, Francis Street Park

CSO 010			
Start Date	Duration	Volume	Rainfall
January		no available data	
February		no available data	
March		no available data	
April		no available data	
May		no available data	
June		no available data	
July		no available data	
August		no available data	
September		no available data	
10/14/09	13.42	14000.00	0.15
10/16/09	17.38	286000.00	0.53
10/17/09	18.58	1403000.00	1.82
10/23/09	7.92	84000.00	0.35
10/25/09	5.13	49000.00	0.25
10/26/09	11.17	39000.00	0.51
10/29/09	14.53	3000.00	0.14
10/30/09	23.08	15000.00	0.17
10/31/09	12.00	20000.00	0.13
11/5/09	13.08	294000.00	0.78
11/6/09	15.77	252000.00	0.66
11/7/09	13.47	212000.00	0.43
11/10/09	21.30	31000.00	2.32
11/13/09	0.90	33000.00	0.11
11/16/09	21.30	4384000.00	2.32
11/17/09	18.80	2235000.00	0.54
11/18/09	2.63	13000.00	0.19
11/19/09	23.97	872000.00	1.38
11/20/09	23.97	215000.00	0.23
11/25/09	9.93	104000.00	0.54
11/26/09	5.03	160000.00	0.38
11/30/09	1.50	32000.00	0.11
12/16/09	11.67	311678.00	0.64
12/19/09	17.33	12832.00	0.17
12/20/09	12.27	120610.00	0.48
12/21/09	8.13	65129.00	0.19
12/22/09	4.30	22846.00	0.09
12/31/09	0.83	18761.00	0.05
number of events	28		
total volume (gal)	11,301,856		

## Summary of 2009 CSO Events at All Sites

Total number of events	106
Total volume (gal)	31,075,575

## **Appendix C**

### **Correspondence**



November 5, 2008

Garin Schriever, P.E.  
Southwest Region Manager  
SWRO Water Quality Program  
Department of Ecology  
P.O. Box 47775  
Olympia, WA 98504-7775

Re: Interruption in CSO flow monitoring, NPDES Permit Condition S12. B.9

Dear Garin:

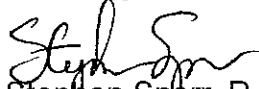
CSO flow monitoring for the City of Port Angeles has been temporarily discontinued. Geotivity, Inc., the company that contracted to perform this service for the City, went into Receivership on September 17, 2008. Geotivity has stopped maintaining the City's flow monitoring equipment and have not responded to repeated attempts to contact the company.

The City is currently discussing the logistics of performing this task. We are moving forward with flow monitoring equipment estimates, as well as electrical and SCADA system connections to all of our active CSO sites.

The City is taking steps to solve this problem as quickly as possible. We will keep you informed of our progress. If there is anything that the Department of Ecology can do to assist us in this situation, your help would be greatly appreciated.

If you have any questions, please call me at 360-417-4803 or email at [ssperr@cityofpa.us](mailto:ssperr@cityofpa.us).

Sincerely,

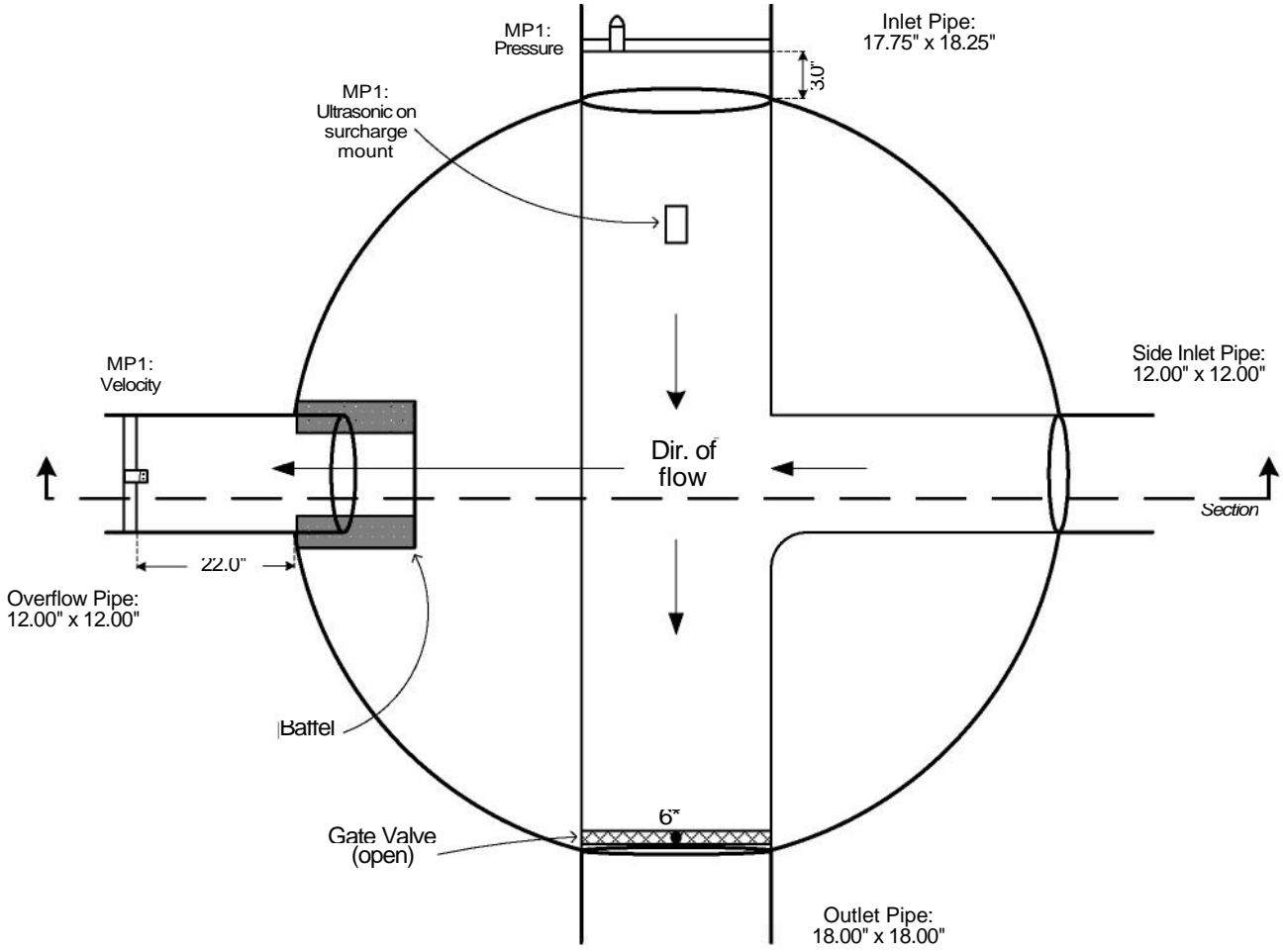


Stephen Sperr, P.E.  
City Engineer

**Appendix D**  
**CSO Manhole Details**

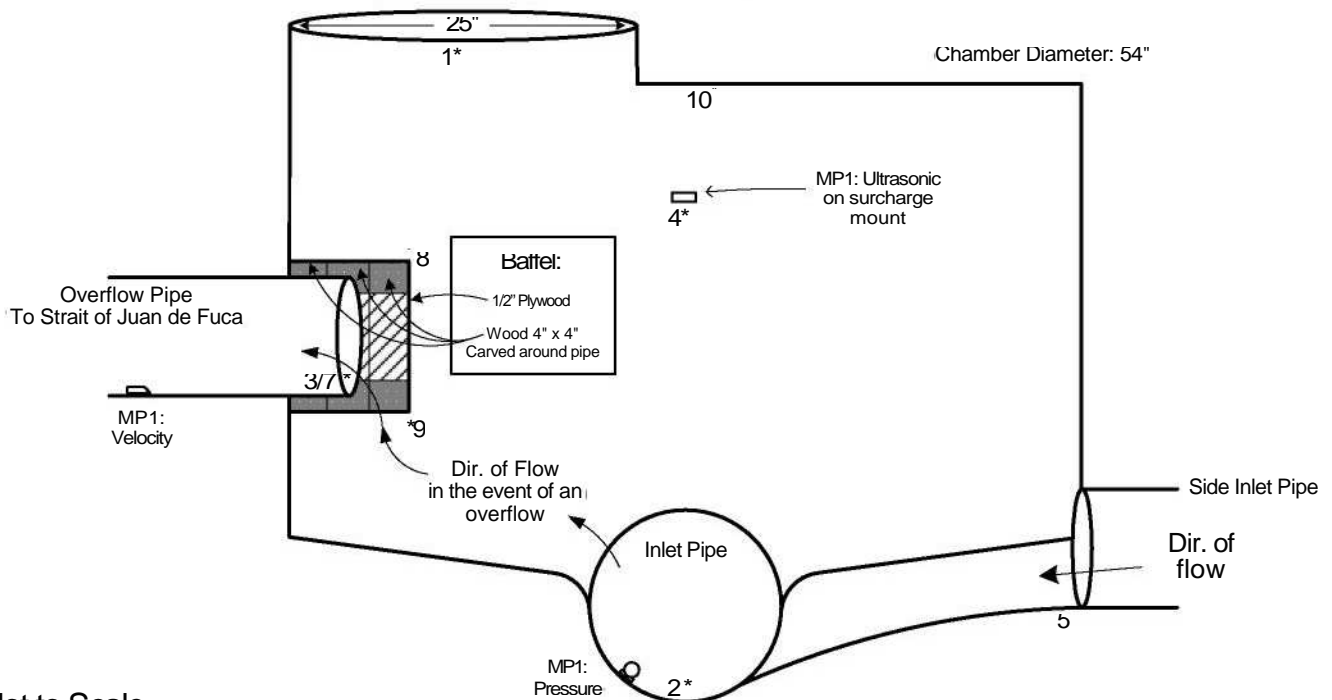
# PA\_CS006 Detailed Drawing

Upstream - Sanitary



Top View N ←  
Cross Section

Note: See Page 2 for elevation measurements.



Not to Scale  
12/29/09

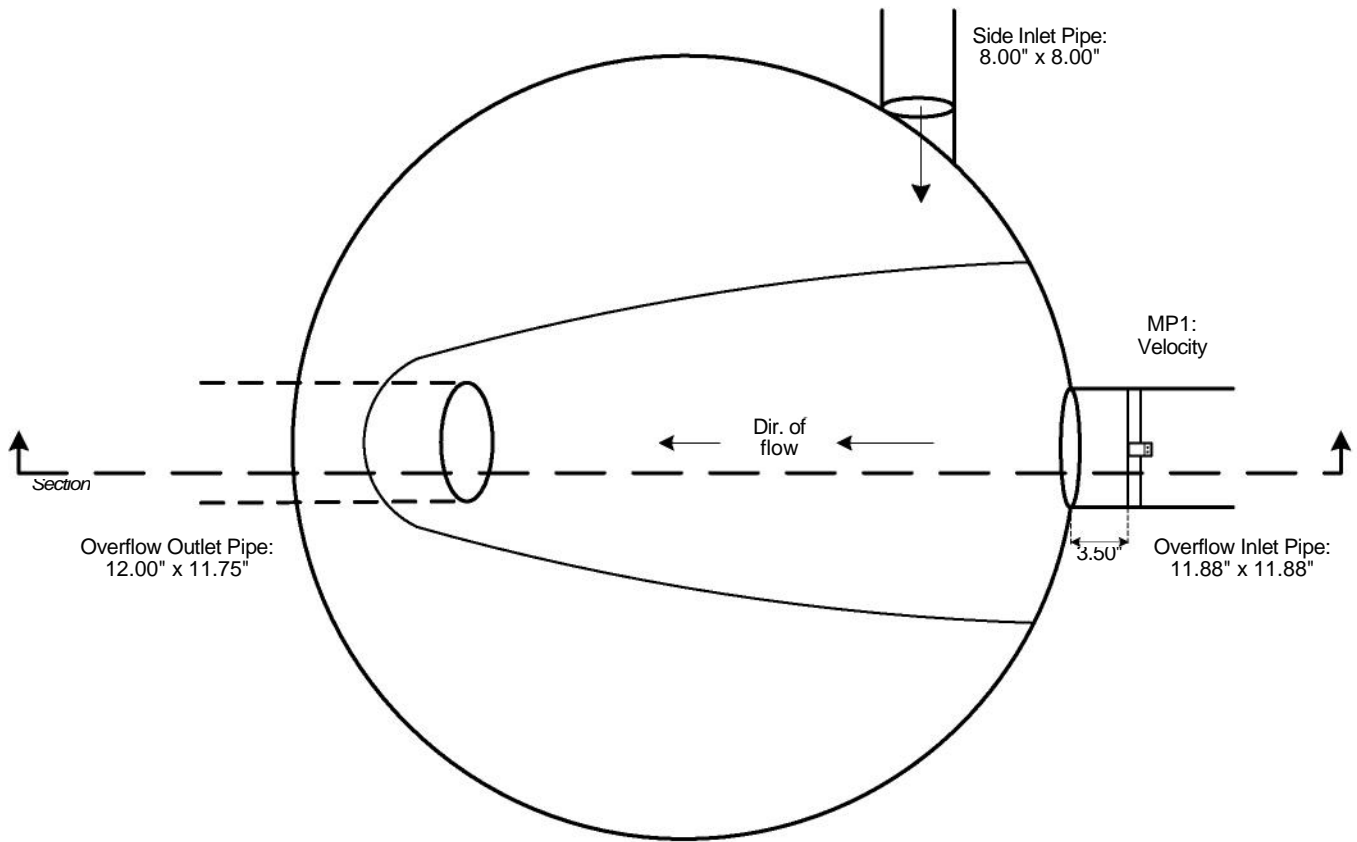
# PA\_CS006 MH Elevations

## MH Elevations

Point #	Description of Point	Distance to Rim	Elevation Based off Rim
1	Rim, @ lowest point (W)	0.00"	15.73'
2	Base of invert @ MP1 ultrasonic	151.50"	3.10'
3	Base of invert @ overflow	103.13"	7.14'
4	Face of MP1 ultrasonic	75.75"	9.42'
5	Base of invert @ side inlet	137.13"	4.30'
6	Base of invert @ outlet	152.13"	3.05'
7	Point of overflow	103.13"	7.14'
8	Top of baffel, lowest point	85.38"	8.62'
9	Bottom of baffel, lowest point	109.38"	6.62'
10	Average ceiling	22.00"	13.90'
Rim elevation of 15.73' taken from GIS provided by city.			

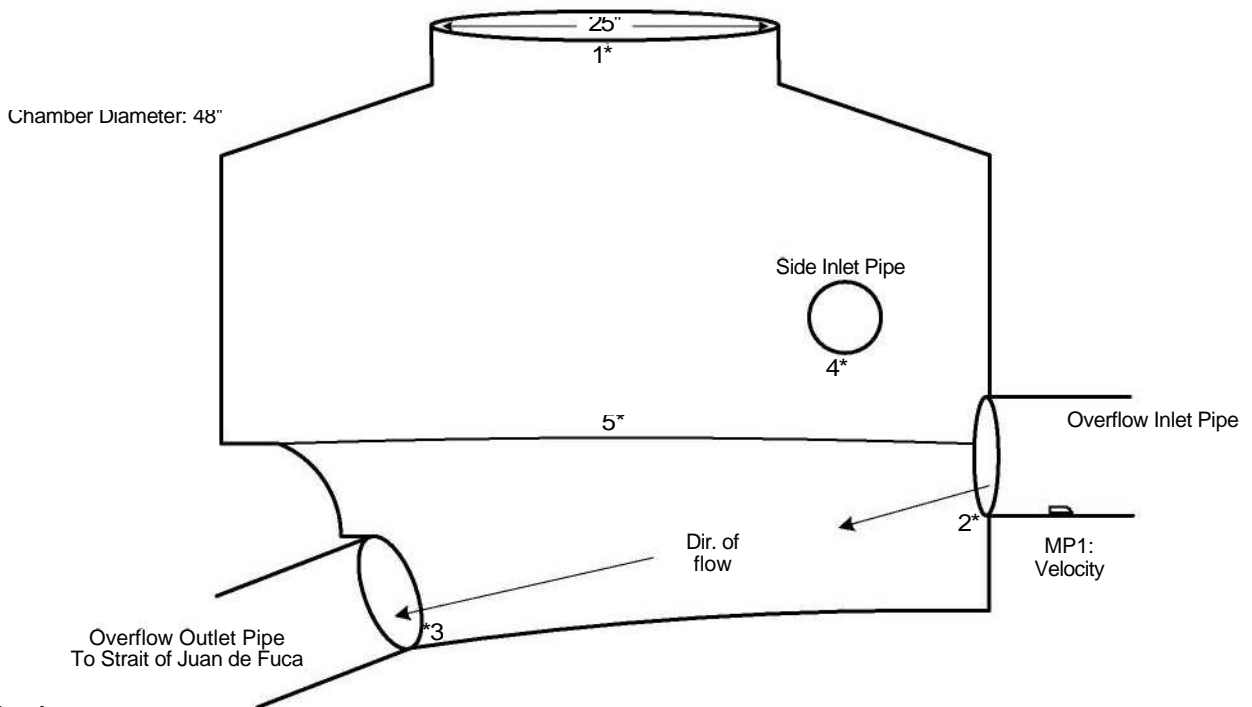
# PA\_CS006-Overflow Detailed Drawing

Downstream - Storm



## Top View $\leftarrow$ N Cross Section

Note: See Page 2 for elevation measurements.



Not to Scale  
12/29/09

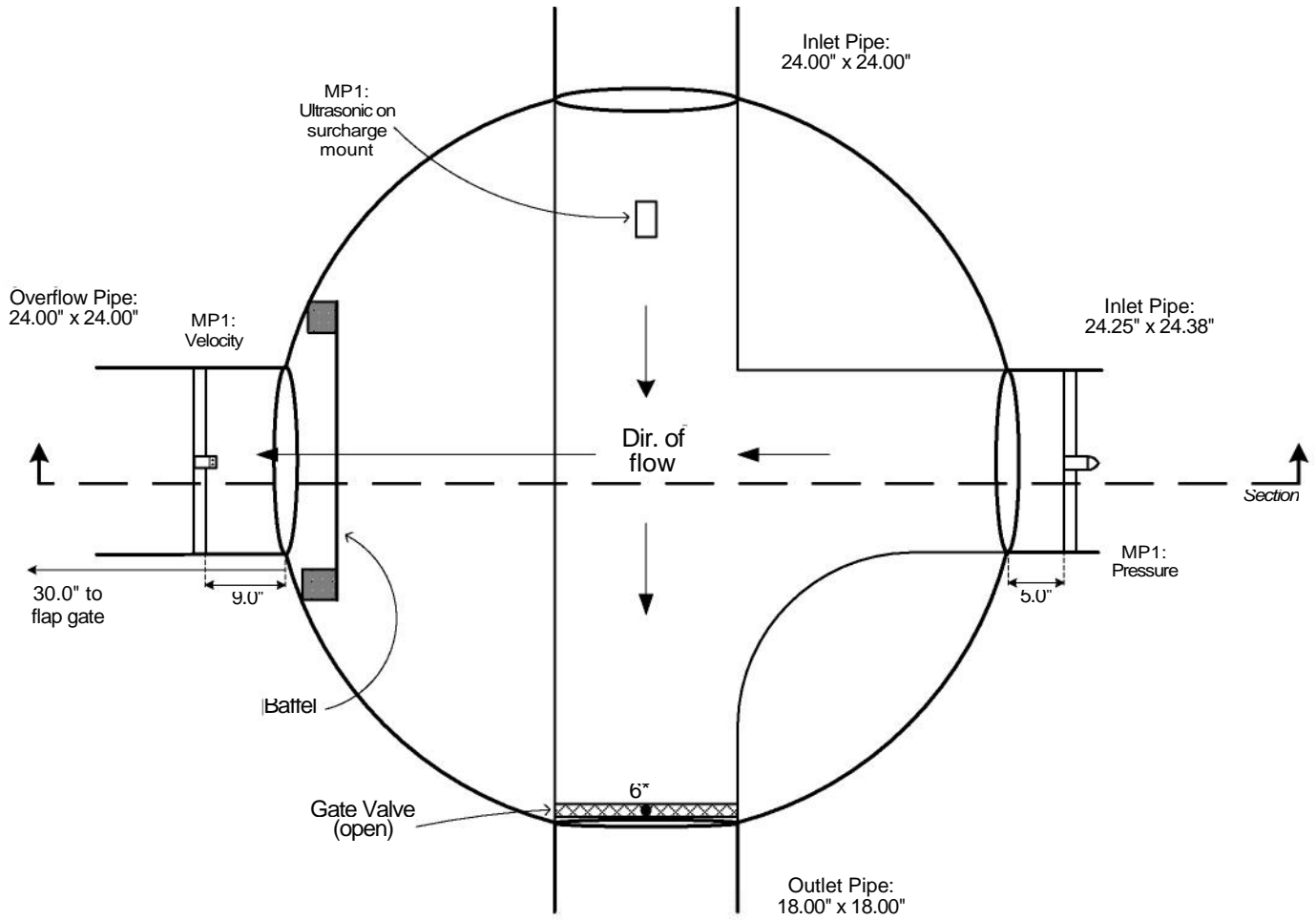
# PA\_CS006-Overflow MH Elevations

## MH Elevations

Point #	Description of Point	Distance to Rim	Elevation Based off Rim
1	Rim, @ lowest point (W)	0.00"	16.28'
2	Base of invert @ overflow inlet	109.25"	7.18'
3	Base of invert @ overflow outlet	117.50"	6.49'
4	Base of invert @ side inlet	78.75"	9.72'
5	Average bench	102.25"	7.76'
Rim elevation of 16.28' taken from GIS provided by city.			

# PA\_CS007 Detailed Drawing

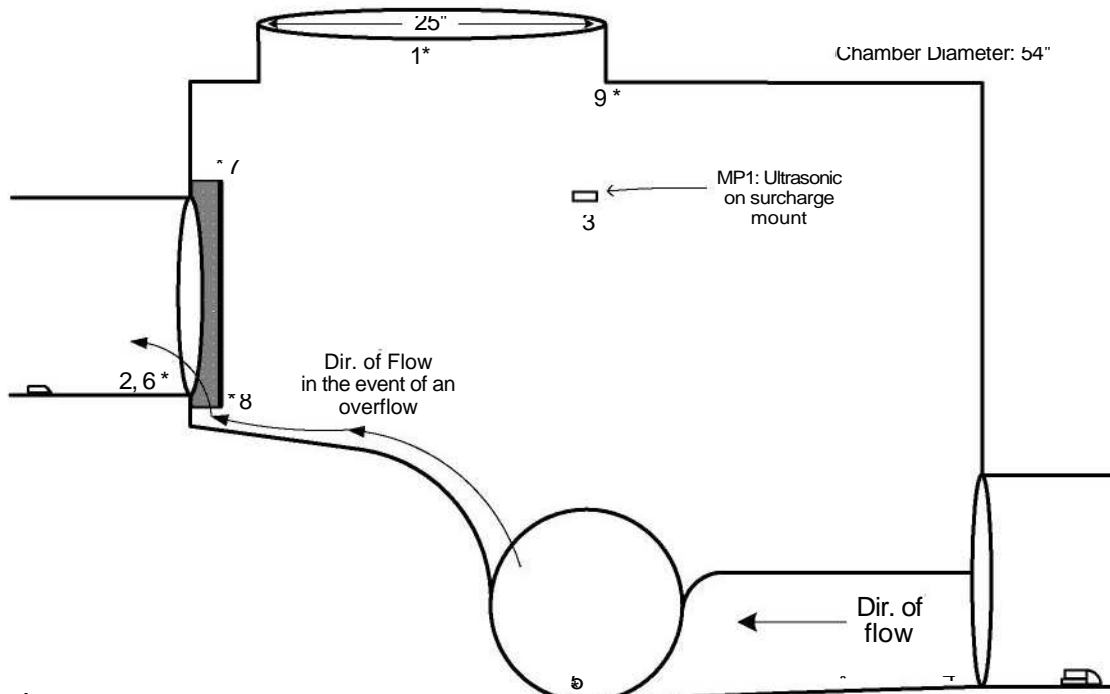
Upstream - Sanitary



Top View N ←

Cross Section N ←

Note: See Page 2 for elevation measurements.



Not to Scale  
1/06/10

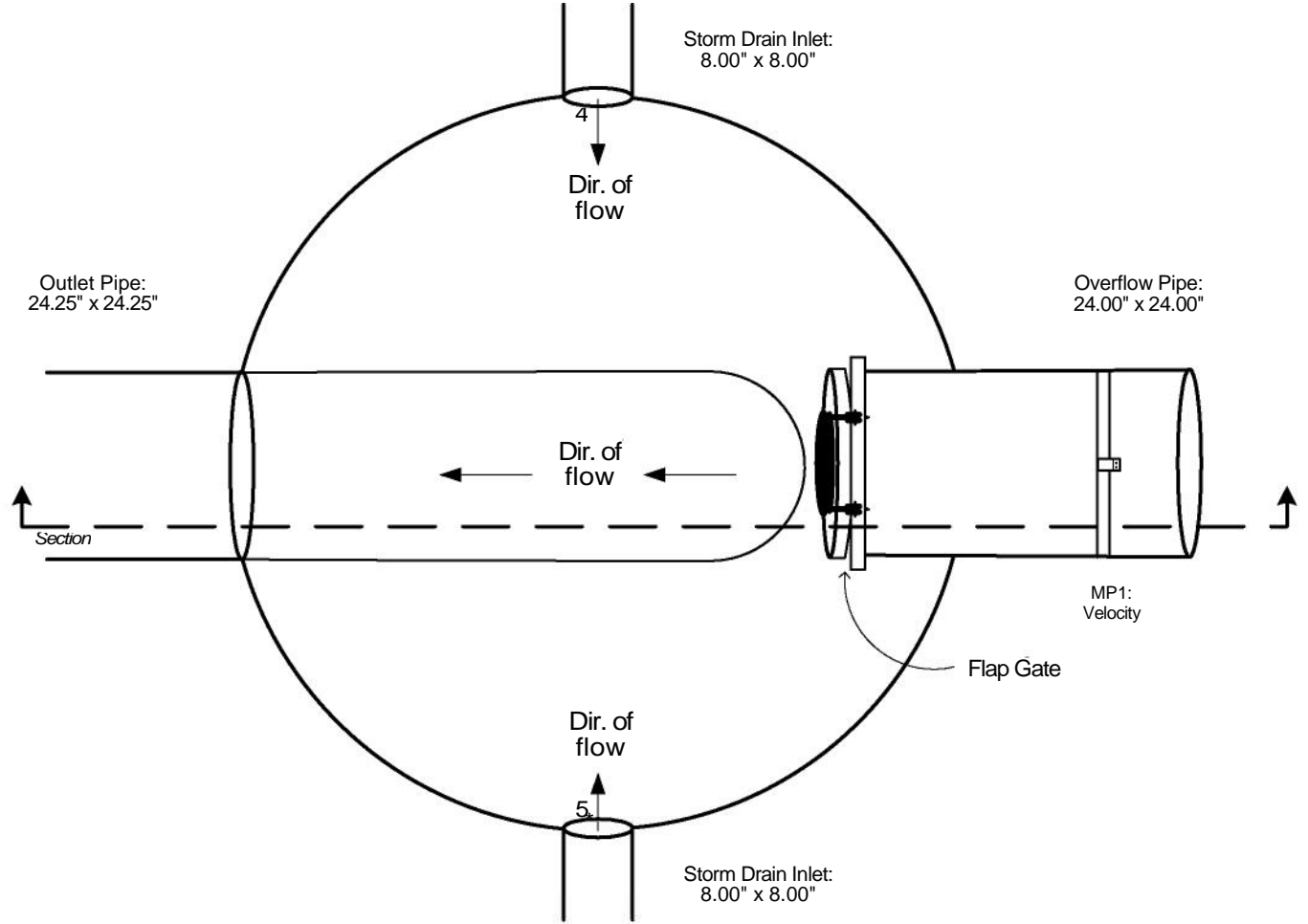
# PA\_CS007 MH Elevations

## MH Elevations

Point #	Description of Point	Distance to Rim	Elevation Based off Rim
1	Rim, @ lowest point (W)	0.00"	15.35'
2	Base of invert @ overflow	90.13"	7.84'
3	Face of MP1 ultrasonic	51.00"	11.10'
4	Base of invert @ side inlet	125.25"	4.91'
5	Base of invert @ inlet	126.75"	4.79'
6	Point of overflow	90.13"	7.84'
7	Top of baffel, lowest point	57.88"	10.53'
8	Bottom of baffel, lowest point	118.50"	5.47'
9	Average ceiling	20.75"	13.62'

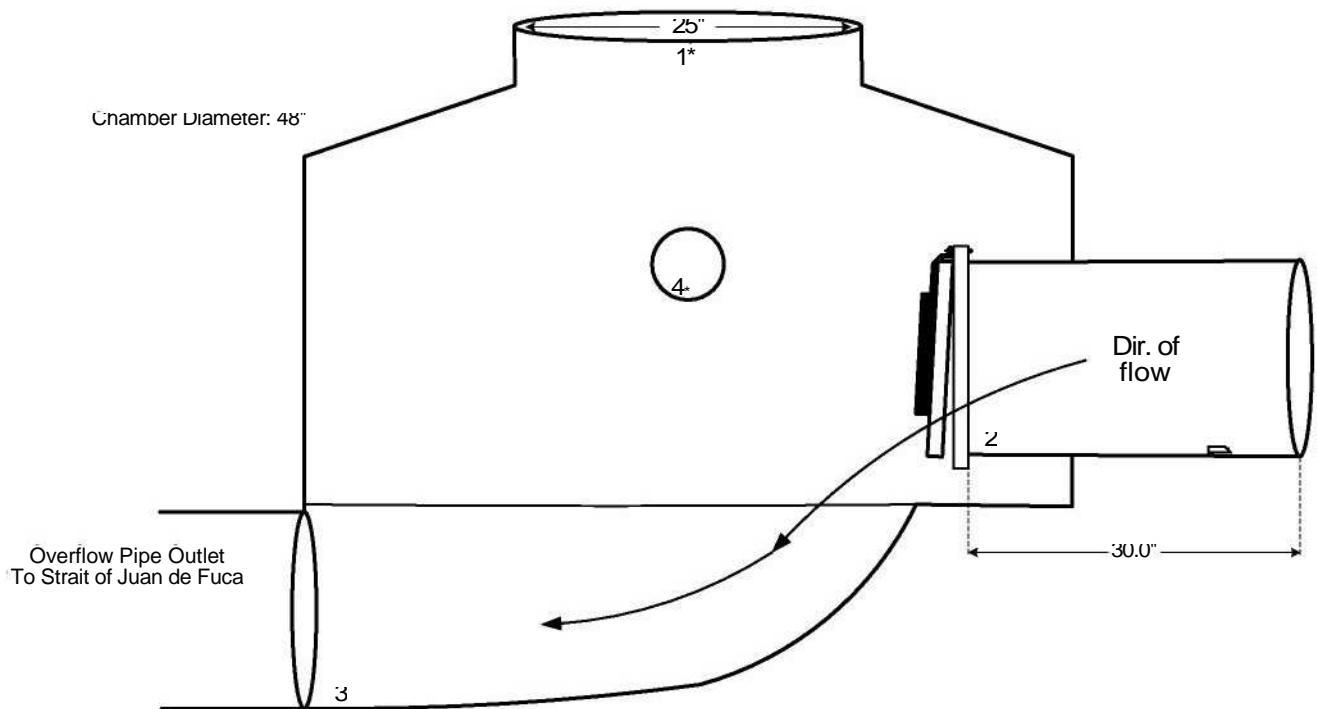
# PA\_CS007-Overflow Detailed Drawing

Downstream - Storm



Top View N ←

Cross Section N ←



Not to Scale  
01/06/10

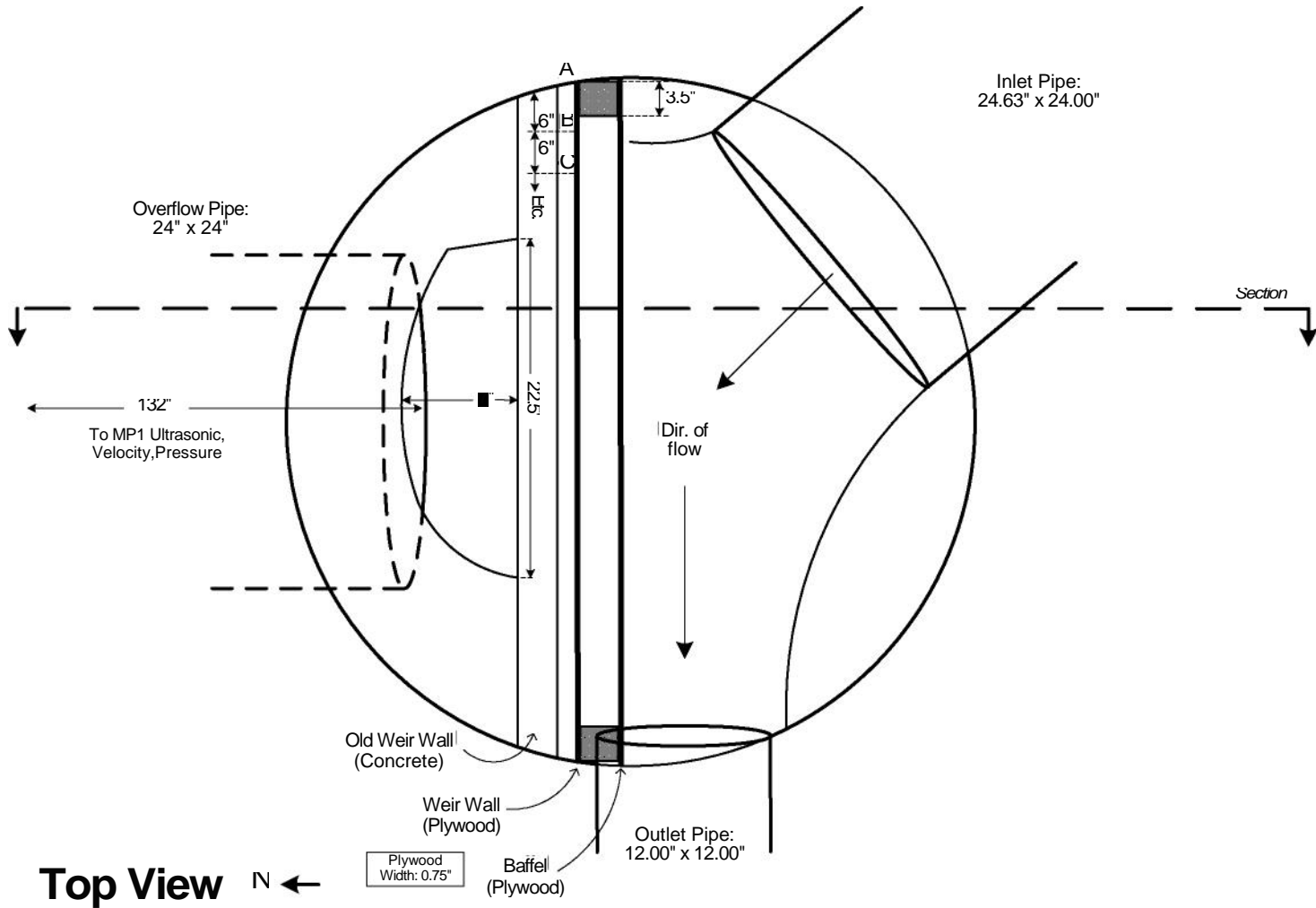
# PA\_CS007-Overflow MH Elevations

## MH Elevations

Point #	Description of Point	Distance to Rim	Elevation Based off Rim
1	Rim, @ lowest point (W)	0.00"	15.35'
2	Base of invert @ inlet	89.25"	7.91'
3	Base of invert @ outlet	126.63"	4.80'
4	Base of invert @ side inlet	68.88"	9.61'
5	Base of invert @ side inlet	69.25"	9.58'

# PA\_CS008 Detailed Drawing

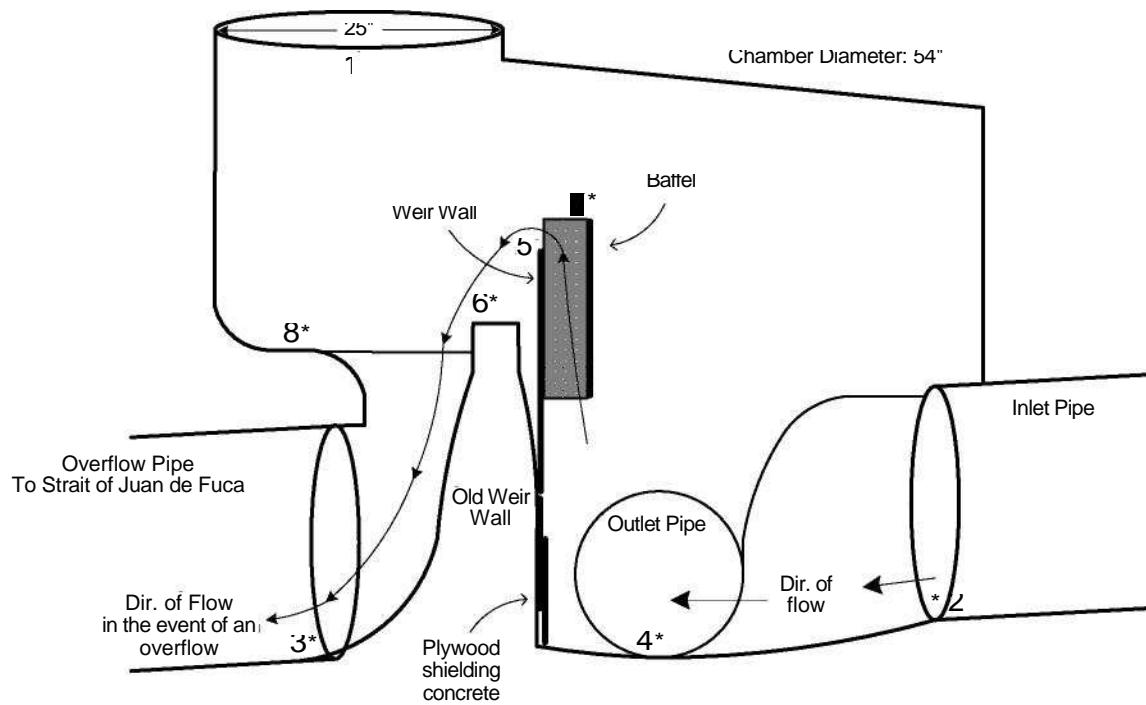
Upstream - Sanitary



Top View N ←

# Cross Section

Note: See Page 2 for elevation measurements.



Not to Scale  
1/21/10

# PA\_CS008

## MH and Weir Wall Elevations

### MH Elevations

Point #	Description of Point	Distance to Rim	Elevation Based off Rim
1	Rim, @ lowest point (N)	0.00"	53.50'
2	Base of invert @ inlet	155.00"	40.58'
3	Base of invert @ overflow	160.25"	40.15'
4	Base of invert @ outlet	160.50"	40.13'
5	Point of overflow	117.00"	43.75'
6	Old weir wall point of overflow	127.75"	42.85'
7	Top of baffel, highest point	113.88"	44.01'
8	Average bench	131.25"	42.56'

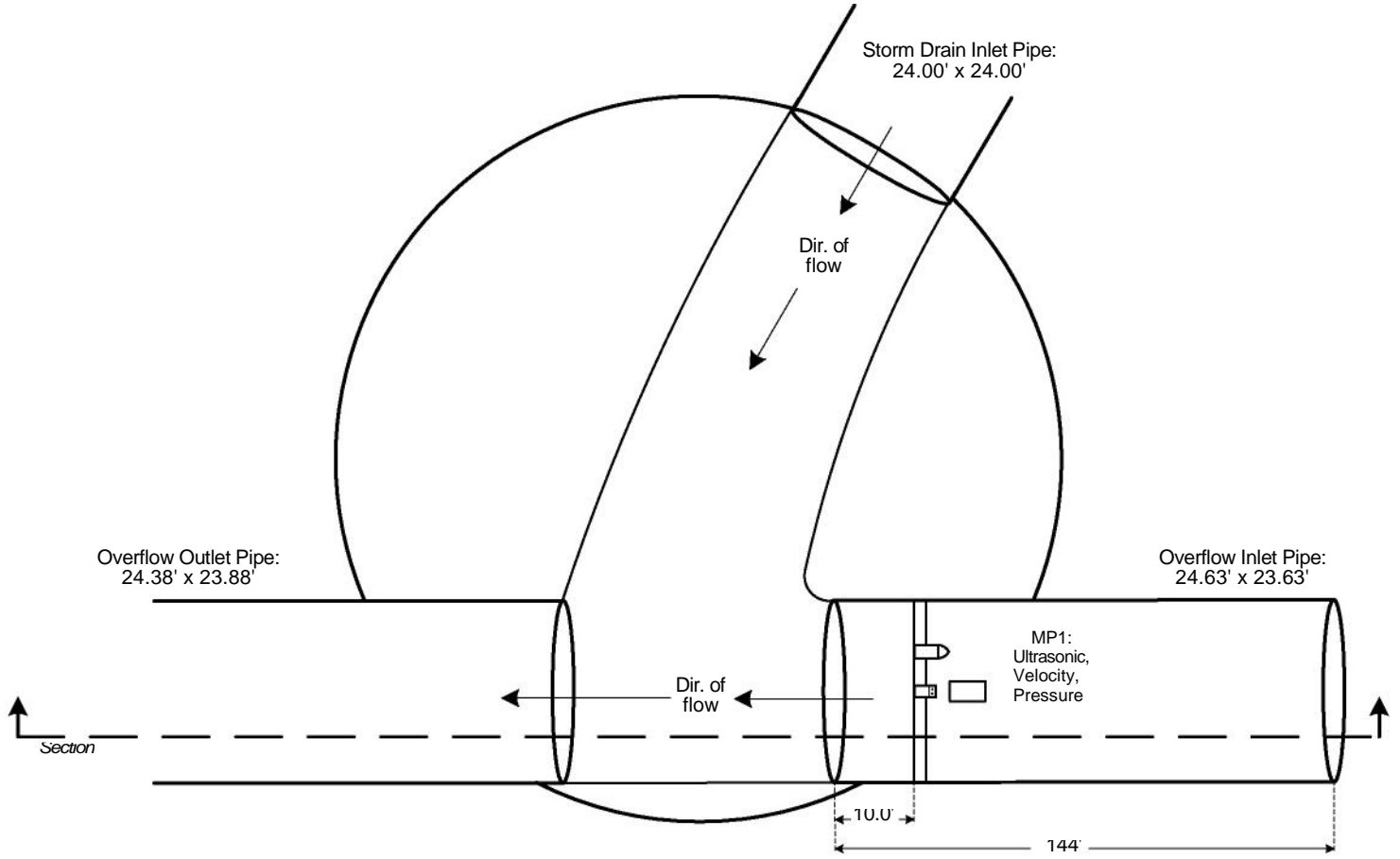
Rim elevation of 53.50' taken from GIS provided by city.

### Weir Wall Elevations

Point	Distance to Rim	Elevation Based off Rim	Length Between Points
A	117.00"	43.75'	0.00"
B	116.88"	43.76'	6.00"
C	116.88"	43.76'	6.00"
D	116.88"	43.76'	6.00"
E	116.75"	43.77'	6.00"
F	116.63"	43.78'	6.00"
G	116.50"	43.79'	6.00"
H	116.38"	43.80'	6.00"
I	116.00"	43.83'	6.00"
J	116.00"	43.83'	4.25"
Total Length = 52.25"			

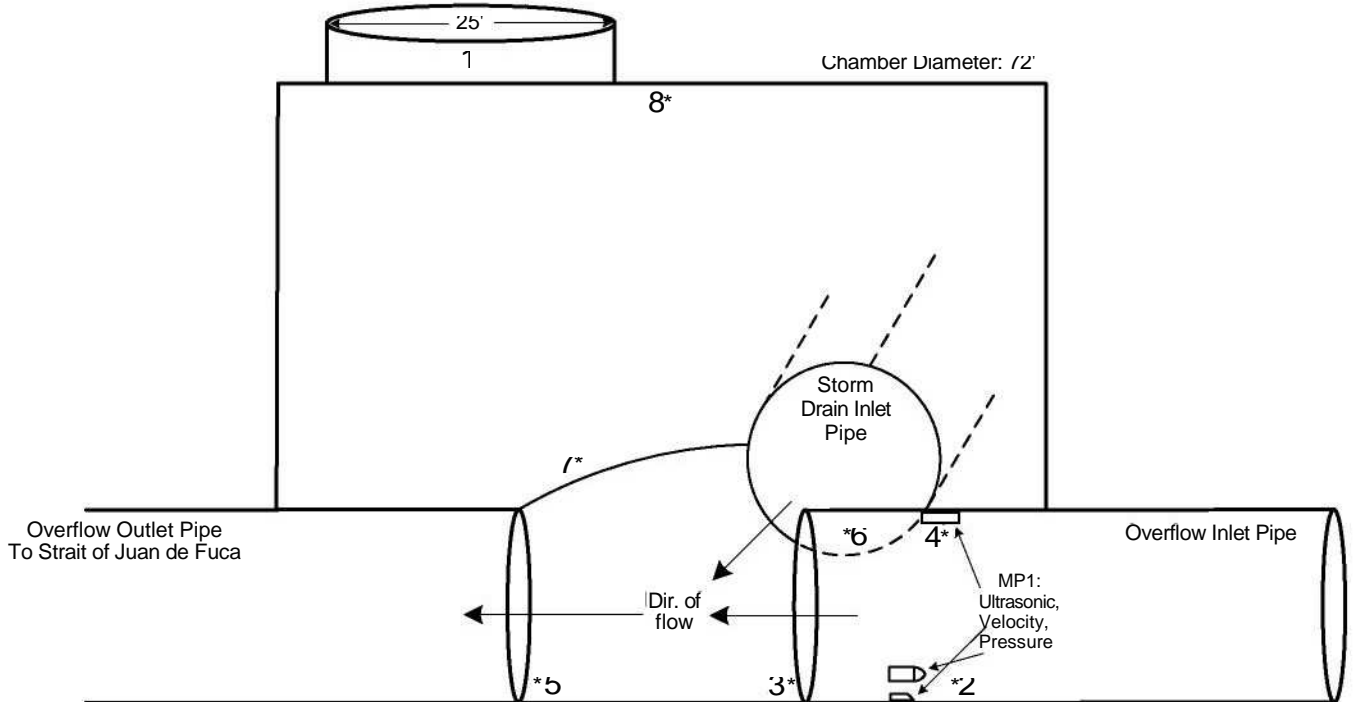
# PA\_CS008-Overflow Detailed Drawing

Downstream - Storm



## Top View N ← Cross Section

Note: See Page 2 for elevation measurements.



Not to Scale  
1/21/10

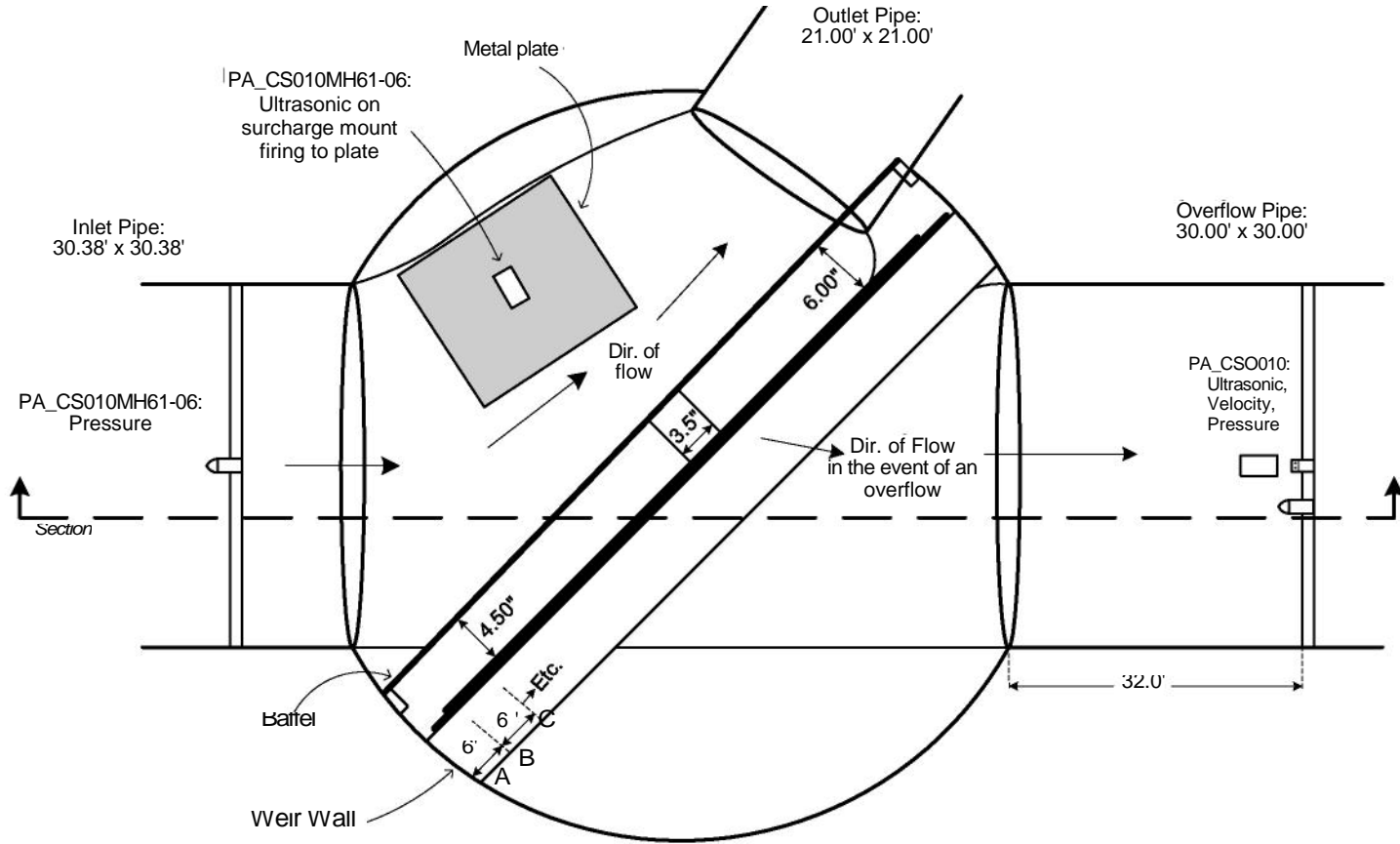
# PA\_CS008-Overflow MH Elevations

## MH Elevations

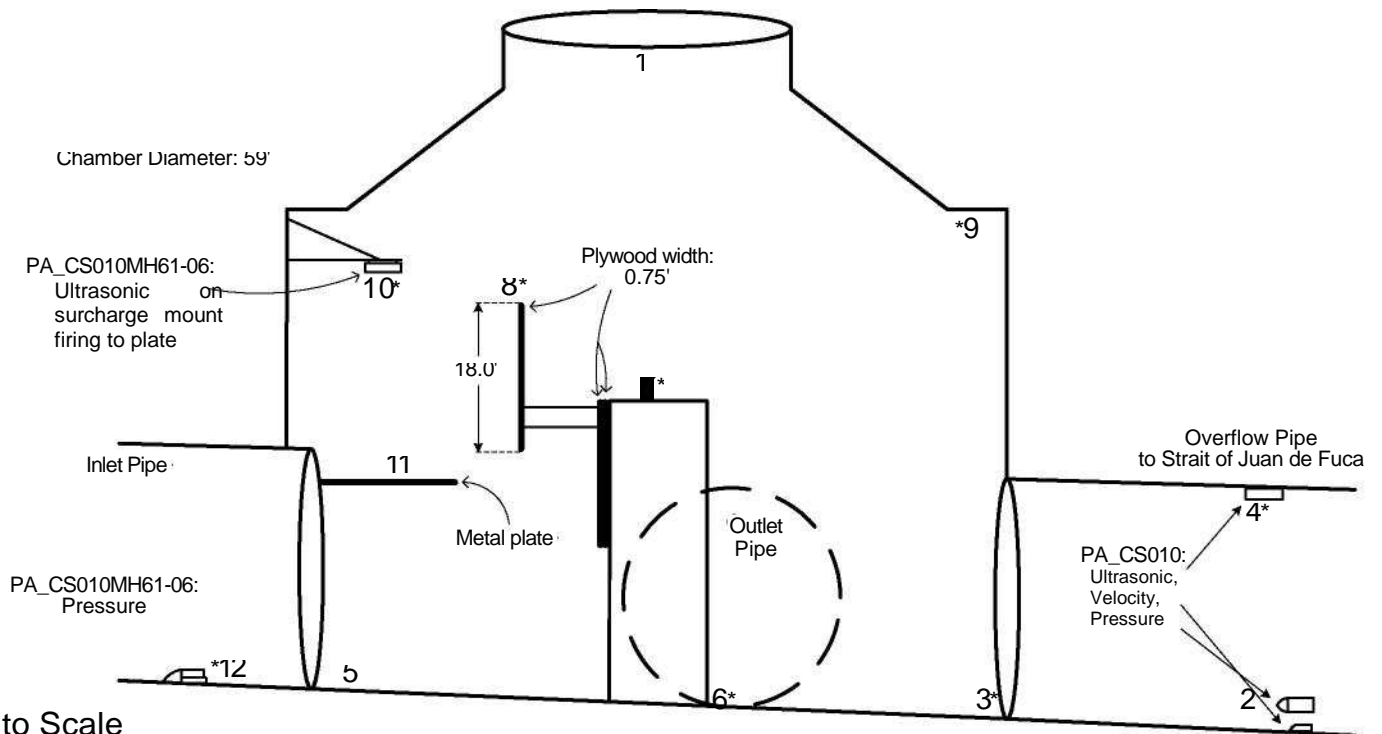
Point #	Description of Point	Distance to Rim	Elevation Based off Rim
1	Rim, @ N	0.00"	52.78'
2	Base of invert @ MP1 ultrasonic	170.00"	38.61'
3	Base of invert @ overflow inlet	171.75"	38.47'
4	Face of MP1 ultrasonic	147.87"	40.46'
5	Base of invert @ overflow outlet	177.00"	38.03'
6	Base of invert @ storm drain inlet	172.50"	38.41'
7	Bench, lowest	154.25"	39.93'
8	Average ceiling	31.50"	50.16'
Rim elevation of 52.78' measured off of known elevation at PA_CS008 (53.50').			

# PA\_CS010 / PA\_CS010MH61-06 Detailed Drawing

Upstream - Sanitary



## Top View



Not to Scale  
1/22/10 Rev. 1

# PA\_CS010 / PA\_CS010MH61-06 MH and Weir Wall Elevations

## MH Elevations

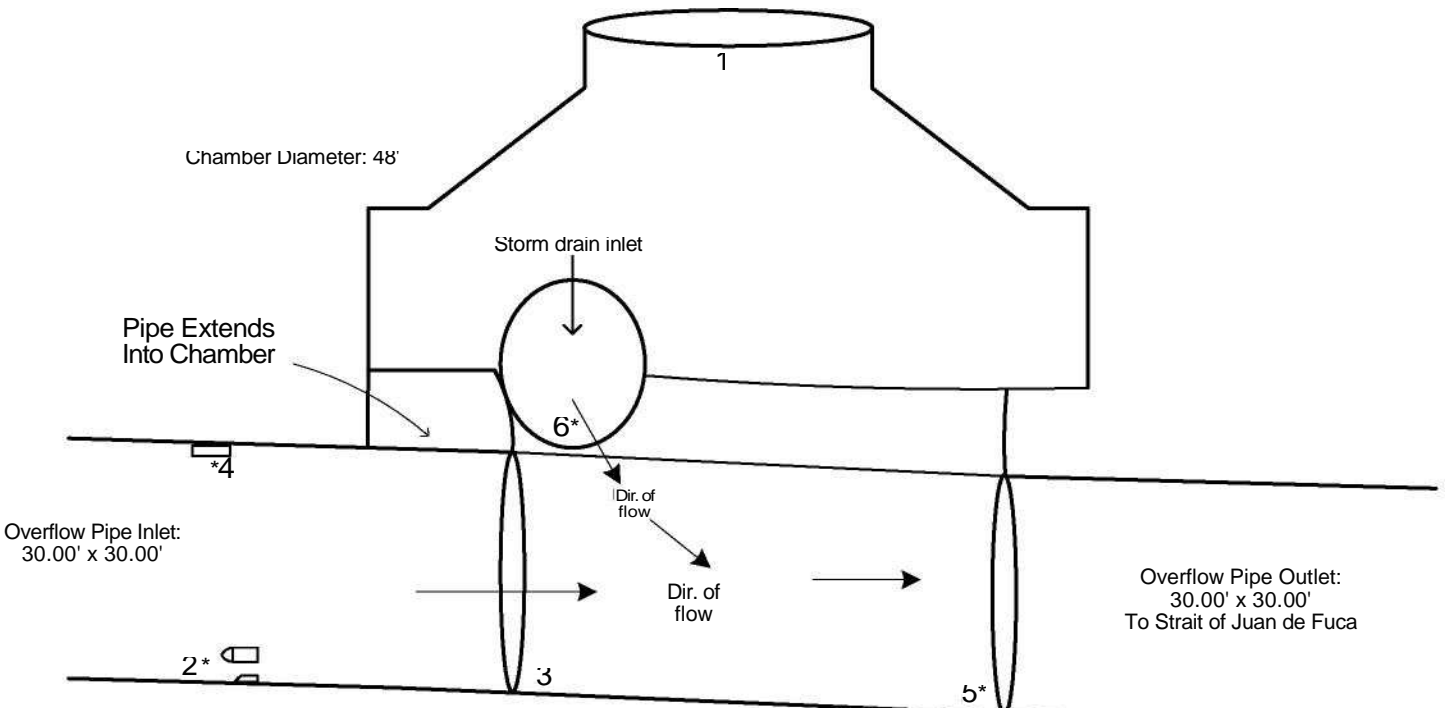
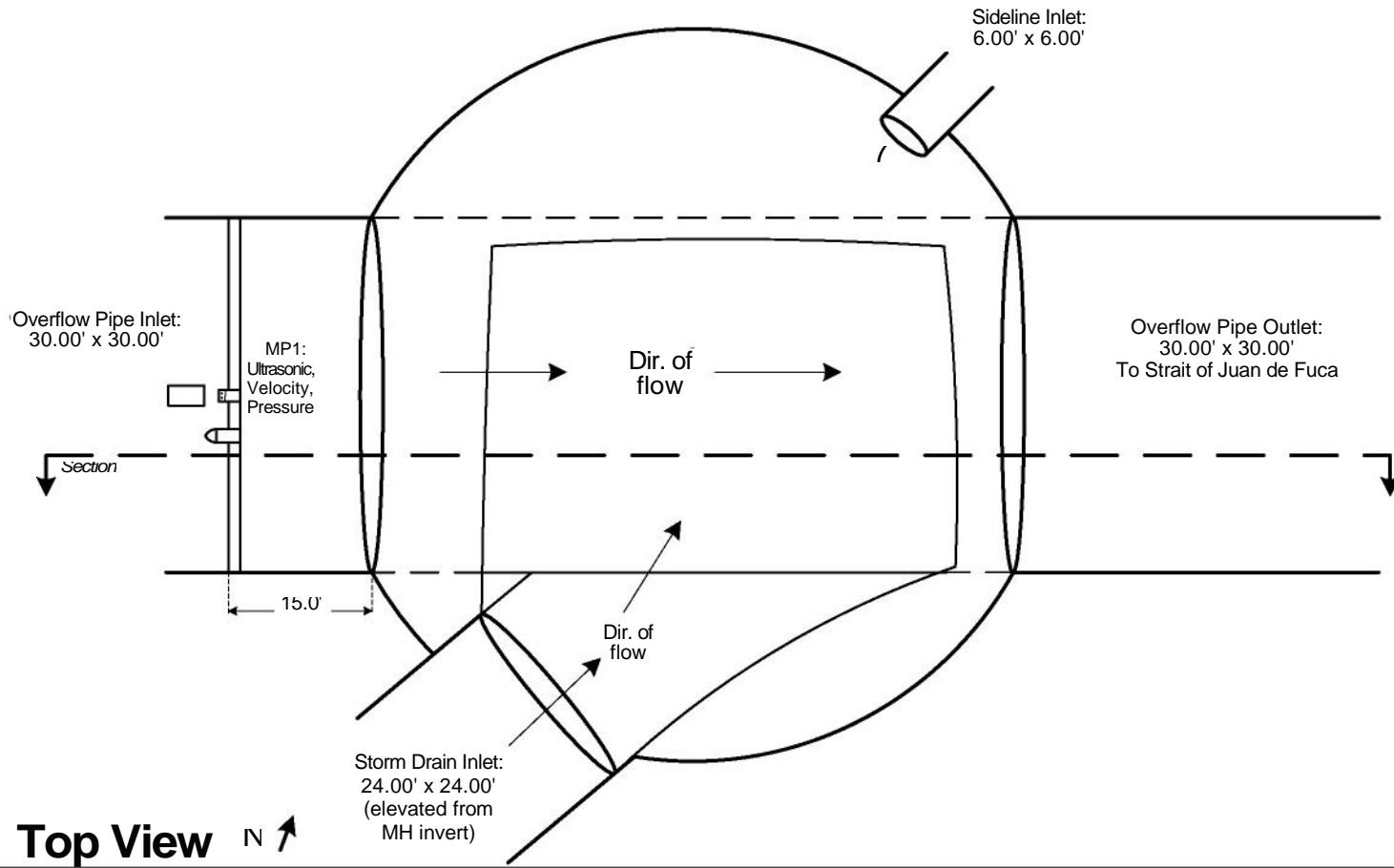
Point #	Description of Point	Distance to Rim	Elevation Based off Rim
1	Rim, @ lowest point	0.00"	74.28'
2	Base of invert @ PA_CS010 ultrasonic	167.88"	60.29'
3	Base of invert @ overflow	167.38"	60.33'
4	Face of PA_CS010 ultrasonic	140.50"	62.57'
5	Base of invert @ inlet	163.75"	60.63'
6	Base of invert @ outlet	167.13"	60.35'
7	Point of overflow	128.00"	63.61'
8	Top of baffel, lowest point	116.00"	64.61'
9	Average ceiling	55.00"	69.70'
10	Face of PA_CS010MH61-06 ultrasonic	100.50"	65.91'
11	Top of plate	139.50"	62.66'
12	Base of invert @ PA_CS010MH61-06 pressure	163.50"	60.66'
Rim elevation of 74.28' taken from GIS provided by city.			

## Weir Wall Elevations

Point	Distance to Rim	Elevation Based off Rim	Length Between Points	Width of Weir Wall @ Point
A	125.75"	63.80'	0.00"	5.00"
B	126.75"	63.72'	6.00"	5.00"
C	127.38"	63.67'	6.00"	6.75"
D	127.75"	63.63'	6.00"	7.00"
E	128.00"	63.61'	6.00"	7.00"
F	128.00"	63.61'	6.00"	7.50"
G	127.88"	63.62'	6.00"	7.25"
H	127.75"	63.63'	6.00"	6.75"
I	127.63"	63.64'	6.00"	7.00"
J	127.50"	63.66'	6.00"	7.25"
K	127.25"	63.68'	3.25"	6.00"
Total Length = 57.25"				

# PA\_CS010-Overflow Detailed Drawing

Downstream - Storm



Not to Scale  
12/03/09

# PA\_CS010-Overflow MH and Weir Wall Elevations

## MH Elevations

Point #	Description of Point	Distance to Rim	Elevation Based off Rim*
1	Rim, @ lowest point	0.00"	74.14'
2	Base of invert @ MP1 ultrasonic	166.25"	60.29'
3	Base of invert @ inlet	167.13"	60.21'
4	Face of MP1 ultrasonic	137.50"	62.68'
5	Base of invert @ outlet	169.75"	59.99'
6	Base of invert @ storm drain	132.75"	63.08'
7	Base of invert @ sideline	49.37"	70.03'
*Rim elevation is 1.63" lower than PA_CS010 (74.28').			