E. Pipeline Safety Hazard Assessment

Appendices

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September 2018 | Pipeline Safety Hazard Assessment

PROPOSED RISE KOHYANG HIGH SCHOOL

Bright Star Schools

Prepared for:

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PLACEWORKS

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1. Introduction

1.1 PURPOSE

This report presents the results of a Pipeline Safety Hazard Assessment (PSHA) prepared for Bright Star Schools, which is evaluating a proposed school site in the City of Los Angeles, California. The PSHA evaluates potential exposure and fatality risk to staff and students from underground or at-grade natural gas or hazardous liquid pipeline releases, and the potential for flooding from high volume water pipelines.

1.2 SCHOOL SITE LOCATION

The 1.15-acre school site is located at 3500 West 1st Street in the City of Los Angeles, California. The site is bounded to the north by West 1st Street, to the east by South Madison Avenue, to the west by a parking lot, and to the south by a parking lot and multi-family and single-family residences. The school site is shown in Figure 1.

1.3 REGULATORY REQUIREMENTS

Under Education Code Section 17251, the California Department of Education (CDE) has authority to approve acquisition of proposed school sites. The school district must obtain CDE approval for sites to receive state funds under the state's School Facilities Program administered by the State Allocation Board. CDE standards and regulations for this process are presented in California Code of Regulations (CCR), Title 5, Sections 14010, 14011, and 14012. Information on assessing safety hazard related to pipelines is discussed in Section 14010 (h):

> *The site shall not be located near an above-ground water or fuel storage tank or within 1,500 feet of the easement of an above-ground or underground pipeline that can pose a safety hazard as determined by a risk analysis study, conducted by a competent professional, which may include certification from a local public utility commission.*

By CDE policy, "any pipeline that has a maximum operating capacity of at least 80 pounds per square inch (psi), including but not limited to those that carry natural gas, liquid petroleum, fuels or hazardous chemicals, shall be included in a pipeline survey, regardless if the pipeline is classified as a transmission or distribution line. Pipelines located within a railroad or other easement or those pipelines serving gas and oil well sites and fields shall also be included".

Additional information on pipelines is contained in CDE's School Site Selection and Approval Guide. This document states that CDE will not approve a proposed school site if the site "contains one or more pipelines, situated underground or aboveground, which carries hazardous substances, acutely hazardous materials, or hazardous wastes, unless the pipeline is a natural gas line which is used only to supply natural gas to that school or neighborhood" (CDE, 2000).

The CDE's School Site Selection and Approval Guide also contain provisions for evaluating high-pressure water pipelines:

> *To ensure the protection of students, faculty, and school property if the proposed school site is within 1,500 feet of the easement of an aboveground or underground pipeline that can pose a safety hazard, the school district should obtain the following information from the pipeline owner and operator:*
>
> - *Pipeline alignment, size, type of pipe, depth of cover*
> - *Operating water pressures in pipelines near the proposed school site*
> - *Estimated volume of water that might be released from the pipeline should a rupture occur on the site*
> - *Owner's assessment of the structural condition of the pipeline.*

1.4 REPORT OBJECTIVES

To meet the requirements of CCR Title 5 Sections 14010 (d) and (h) and CDE's policy on pipelines, this PSHA is designed to meet the following objectives:

- Identify all natural gas and hazardous liquid pipelines located within 1,500 feet of proposed or existing school sites
- Complete a Stage 1, Stage 2, or Stage 3 risk analysis for each identified pipeline to predict fatality risk
- Where appropriate, identify and develop mitigation measures to reduce predicted fatality risk to a level below an established significance threshold
- Identify all high pressure/high volume water pipelines within 1,500 feet of the proposed school site and evaluate the potential for flooding
- Where appropriate, identify and develop mitigation measures to reduce flooding impacts to acceptable levels.

1.5 ASSESSMENT METHODOLOGY

The CDE has developed and published guidance procedures for evaluating safety hazards associated with natural gas and hazardous liquid releases from underground and aboveground pipelines. A detailed description of the procedures is provided in the Guidance Protocol for School Site Pipeline Risk Analysis (CDE, 2007). These procedures were used in conducting the PSHA.

The PSHA process is composed of two steps. The first step (Stage 1) is a risk screening analysis (RSA), based on the distance of the pipeline(s) from the school site and operating characteristics of the pipeline(s). If the screening criteria are met, the level of risk is acceptable and no further analysis is required.

If the screening criteria are not met, then the second step of the PSHA process is completion of a Stage 2 quantitative risk analysis (QRA). The Stage 2 risk analysis considers pipeline accident rates, school dimensions, conditional probabilities for ignition, school attendance time, and fatality probabilities for different exposure scenarios (jet fire, flash fire, and explosion) to estimate individual risk (IR). Pipelines

located within 50 feet of a school site also are subject to a Stage 3 (more comprehensive) analysis to verify the results of the Stage 2 evaluation.

Individual fatality risk is compared to the significance threshold level of one in one million (1.0×10^{-6}; individual risk criterion, IRC). If the estimated risk is less than one in one million, then no significant safety hazard is predicted for the school site. If the estimated risk is greater than one in one million, mitigation measures are required to reduce risk to within acceptable limits or a more detailed Stage 3 risk analysis can be conducted.

In addition to individual risk, an estimate of the potential risk for the population present at the school site is determined by calculating the total individual risk (TIR) indicator ratio and the population risk indicator. These parameters add an additional perspective by taking into account the site configuration and school population. There is no significance threshold established by the CDE for this evaluation, and this does not replace the IR estimate as the primary decision criteria for evaluating risk at the school site. However, it does provide additional information regarding the magnitude of risk at the school.

The CDE also has developed risk analysis procedures for evaluating flooding associated with releases from large diameter water pipelines, as described in CDE's Guidance Protocol for School Site Pipeline Risk Analysis (CDE, 2007). A safety issue associated with large diameter water pipelines is the potential for flooding. Also, releases from underground water pipelines can cause subterranean erosion of saturated soil, leading to subsidence or formation of a sinkhole. The most likely cause of failure is a large magnitude earthquake and associated strong ground shaking.

Although no specific criteria have been established by the CDE as a threshold of significance for flooding at a school site, a water depth of 12 inches or greater is a trigger that could warrant further evaluation (CDE, 2007).

2. Hazard Assessment

2.1 PIPELINE INFORMATION AND OPERATIONAL DATA

There is one natural gas distribution pipeline within 1,500 feet of the proposed school site. No natural gas transmission pipelines, crude oil pipelines, or other hazardous liquid pipelines were identified within the 1,500-foot radius (National Pipeline Mapping System, 2018). The location of the pipeline is shown on Figure 1.

Natural gas pipeline data were obtained from Southern California Gas Company (SoCalGas, 2018). There is a 6-inch natural gas distribution pipeline located beneath Virgil Avenue that is approximately 660 feet to the east of the school site. The pipeline's maximum allowable operating pressure (MAOP) is 204 pounds per square inch gauge (psig). SoCalGas pipelines are typically constructed of steel and are coated and equipped with an induced current cathodic protection system to minimize corrosion. They are typically buried at least 36 inches below ground surface (bgs). The distance between the shutoff valves was not provided so the CDE default value of 5 miles was used in the analysis. It was conservatively assumed that all of the natural gas in the pipeline between the isolation valves (a distance of 5 miles) could be released into the atmosphere. In the event of loss of pressure, leak detection, or significant deviations from normal operating parameters, emergency procedures would be activated, including contact with the local fire department and emergency personnel. The pipeline is inspected in accordance with Federal (49 CFR 192) and State (CPUC General Order 112-E) regulations. The pipeline is surveyed annually to look for pipeline leaks, construction activity, and other factors that may threaten the pipeline. Also, the external and internal corrosion systems and valves are monitored annually.

There are 11 high-volume water lines identified within 1,500 feet of the site based on data from the Los Angeles Department of Water and Power (LADWP, 2018). The identified pipelines are summarized in Table 1. The locations of the water pipelines are shown on Figure 1, and an evaluation of flooding potential with respect to the school site is provided in Section 2.6.

Table 1 Water Pipelines

Pipeline Diameter	Pipeline Location	Material of Construction	Agency
60-inch	1st Street Trunk Line	Water Weld Joint Cement Lined Steel (W.W.J.C.L.)	LADWP
12-inch	1st Street, East of Vermont Avenue	Ductile Iron Type Rubber Gasket Cement Lined (D.I.A.R.G.C.L.)	LADWP
24-inch	3rd Street Trunk Line, West of Vermont Avenue	D.I.A.R.G.C.L.	LADWP
12-inch	3rd Street, East of Vermont Avenue	D.I.A.R.G.C.L.	LADWP
30-inch	Vermont Avenue	D.I.A.R.G.C.L.	LADWP
12-inch	Vermont Avenue, North of Beverly Boulevard	W.W.J.C.L.	LADWP
12-inch	Virgil Avenue	Cast Iron	LADWP
20-Inch	Beverly Boulevard, between Vermont Avenue and Juanita Avenue	Cast Iron	LADWP
12-Inch	Beverly Boulevard, between Juanita Avenue and Westmoreland Avenue	Asbestos Cement	LADWP
24-inch	Temple Street	Cast Iron	LADWP
12-inch	Silver Lake Boulevard	W.W.J.C.L.	LADWP

2.2 LAND USE AND TERRAIN

Surrounding land use consists of existing residential and commercial properties, Virgil Middle School, and a parking lot. There are several buildings or structures that could partially block or buffer vapor releases or jet flames if an incident were to occur involving the natural gas pipeline located beneath Virgil Avenue. Potential ignition sources may include motor vehicles traveling along the adjacent streets, traffic signals, overhead high voltage electrical lines, and residential gas heating units. The terrain in the vicinity of the school site is relatively flat, with a gradual slope towards the northeast on-site.

2.3 RELEASE AND CONSEQUENCE SCENARIOS

In accordance with the CDE Guidance Protocol, two conservative release scenarios were evaluated for the natural gas pipeline: 1) a rupture or high volume release equal to the pipeline's diameter, and 2) a leak or small volume release from a 1-inch diameter hole. Three potential consequences were evaluated for each release scenario: 1) jet fire, 2) flash fire (flammable vapor cloud), and 3) explosion. Results from the ALOHA computer analyses indicate that unconfined vapor cloud explosions would not occur in an open environment (i.e., residential land use setting) and this scenario was not subject to further analysis.

2.4 STAGE 2 RISK ANALYSIS

The criterion for a Stage 1 screening analysis was not met because the identified natural gas pipeline has a maximum segment length of greater than 1,000 feet in the vicinity of the school site. Therefore, a Stage 2 risk analysis was conducted to determine the cumulative individual risk (IR) to students and staff at the proposed school. The input data associated with this PSHA are provided in Appendix A, and are summarized in Table 2.

Table 2 Stage 2 Analysis Inputs

Description	Diameter (inches)	Maximum Pipeline Pressure (psig)	Nearest Distance from Pipeline to Property Boundary (feet)
Natural Gas Distribution Pipeline	6	204	660

2.5 STAGE 2 RISK CALCULATION RESULTS

Risk calculation results for the natural gas pipeline are provided in Appendix A. The hazard footprints for the 6-inch natural gas distribution pipeline do not extend farther than 162 feet, and would not reach the school site which is approximately 660 feet from the pipeline. Therefore, the calculated individual risk (IR) for the 6-inch natural gas distribution pipeline is zero, which is less than the CDE significance criterion of one in a million (1.0 x 10-6). No further analysis is required for this pipeline.

2.6 WATER PIPELINE FLOODING ANALYSIS

In addition to natural gas and hazardous liquid pipelines, the CDE requires that the risk of releases be evaluated from high volume (≥12 inches) water pipelines and aqueducts. The CDE Guidance Protocol for School Pipeline Risk Analysis provides a methodology for evaluating the potential for flooding. A probability analysis is not required.

Because all of the water pipelines identified in Table 1 are located beneath streets, a pipeline flooding analysis was conducted to determine the depth and location of water flow within the street in the event of a pipeline leak or rupture. For this worst-case analysis, it was conservatively assumed that all of the water flowing through the pipelines at their maximum capacity would reach the surface. In addition, no credit was taken for the presence of storm drains along these streets.

Release impacts were calculated based on the procedures specified in the CDE manual. The release rate was determined by multiplying the pipe area by an assumed velocity of 5 feet per second (fps). Then the release rate was compared to the carrying capacity of the street, taking into account longitudinal slope, to determine if the water would be contained within the confines of the street curbing (Jeffers & Associates, 2006). The results are provided in Table 3.

Table 3 Water Mains - Street Flow

Pipeline Diameter	Pipeline Location	Release Rate (cfs)	Street Width (ft)	Depth of Flow in Street (in)	Curb Height (in)	Exceeds Street Carrying Capacity?
60-inch	1st Street Trunk Line	98.17	60	11.7	6	Yes
12-inch	1st Street, East of Vermont Avenue	3.93	60	2.9	6	No
24-inch	3rd Street, West of Vermont Avenue	15.71	64	4.3	8	No
12-inch	3rd Street, East of Vermont Avenue	3.93	45	2.7	8	No
30-inch	Vermont Avenue	24.54	70	6.9	8	No
12-inch	Vermont Avenue, North of Beverly Boulevard	3.93	75	2.8	8	No
12-inch	Virgil Avenue	3.93	68	2.8	6	No
20-inch	Beverly Boulevard	10.91	55	4.1	6	No
12-inch	Beverly Boulevard	3.93	55	2.9	6	No
24-inch	Temple Street	15.71	68	5.7	6	No
12-inch	Silver Lake Boulevard	3.93	50	3.6	6	No

Assuming a standard 6-inch curb for residential streets (e.g., 1st Street, Virgil Avenue, Beverly Boulevard, Temple Street, and Silver Lake Boulevard) and an 8-inch curb for arterial streets (e.g., 3rd Street and Vermont Avenue), the water released from a full-flow rupture of 10 of the 11 identified water mains would be entirely contained within the confines of the curbing and would not result in flooding at the project site. However, a release from the 60-inch 1st Street Truck Line would exceed the carrying capacity of the street and could potentially impact the project site.

The predicted worst-case depth of flow in the street was 11.7 inches for a full release of the 60-inch water line. Assuming a standard 6-inch curb for 1st Street, released water from the 60-inch water line would exceed the carrying capacity of the street by 5.7 inches. However, the CDE has postulated a level of concern as a water depth of 12 inches or greater at the school site. Therefore, the calculated water depth of 5.7-inches would be less than CDE's level of concern and would not pose a significant risk to occupants at the project site in the unlikely event of a water pipeline break.

For this worst-case analysis, it was conservatively assumed that all of the water flowing through the pipeline at its maximum capacity would reach the surface. Given that the pipeline is buried approximately a minimum of 3 feet bgs, only a portion of the water released from the pipeline would reach the surface. In addition, no credit was taken for the existing surface topography and the presence of storm drains along the streets. According to topographic maps (provided in Appendix A), the terrain slopes towards the northeast on-site and in the immediate site vicinity. Therefore, released water from the 1st Street Trunk Line would flow east along 1st Street and away from the school site. The presence storm drain inlets at the intersection of 1st Street and Madison Avenue would further reduce potential flooding impacts at the site.

2.7 SUMMARY AND RECOMMENDATIONS

The results of the Stage 2 screening analysis indicate that the 6-inch natural gas distribution pipeline located 660 feet east of the site would not pose a risk to students or staff at the proposed school site because the hazard footprints do not reach the school site. If a rupture or leak should occur in the water mains within 1,500 feet of the school site, the results of the flooding analysis indicate that the released water would not result in water depths at the school site that would pose a significant risk to students and staff.

Even though the impact of pipeline releases was found to be less than significant, it is recommended that the school's emergency response and evacuation plan address the possibility of natural gas or water releases and identify potential evacuation routes. Also, contact names and numbers for the pipeline and water agencies (Southern California Gas Company, Los Angeles Department of Water and Power) should be maintained with the emergency response plan in case the school needs to report pipeline releases. A map of the pipeline locations and emergency contact information should be kept with the school's emergency response plan.

3. References

California Department of Education (CDE), 2007. Guidance Protocol for School Site Pipeline Risk Analysis, Prepared by URS Corporation. February, 2007.

_____. 2000. Resources for School Facilities Planning, School Selection and Approval Guide. Prepared by School Facilities Planning Division, CDE, Sacramento, CA.

Jeffers & Associates, 2006. Modified Manning's Equation Solver. Version 3.0.

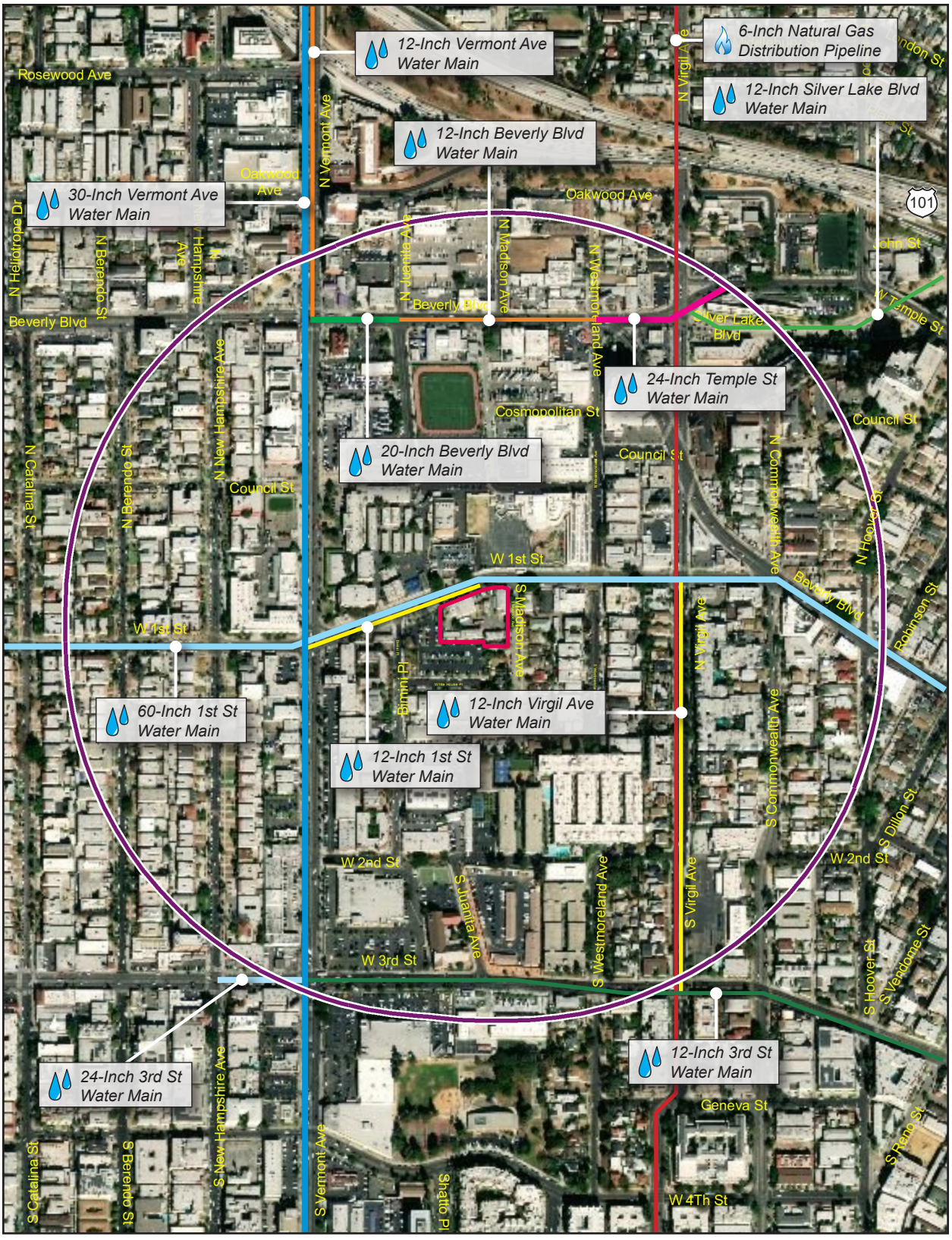
Los Angeles, Department of Water and Power (LADWP), 2018. Email Correspondence between Mr. Mark Patterson, Associate Engineer, LADWP, to Ms. Danielle Clendening, Intern, PlaceWorks. Dated June 19, 2018.

National Pipeline Mapping System, 2018. Hazardous liquids pipeline map produced by the NPMS Public Viewer at www.npms.phmsa.dot.gov. Accessed on June 19, 2018.

Southern California Gas Company (SoCalGas), 2018. Email Correspondence and information provided by Mr. Cleofas Covarrubias, Planning Associate, SoCalGas, to Ms. Danielle Clendening, Intern, PlaceWorks. Dated August 24, 2018.

US Environmental Protection Agency (USEPA), 2016. ALOHA (Areal Locations of Hazardous Atmospheres) computer model, Version 5.4.7, at USEPA website: http://www.epa.gov/emergencies/content/cameo/aloha.htm.

Figure 1 - Site Location and Pipeline Map



Source: ESRI, 2018

PlaceWorks

Appendix A. CDE Risk Analysis Summary Forms and Calculations

Appendix

Local Educational Agency	
Date:	September 4, 2018
Local Educational Agency	Bright Star Schools
Contact	Mr. Elijah Sugay, Vice President, Finance and Facilities
Telephone Number	323-954-9957
E-mail address	esugay@brightstarschools.org
Street Address	600 S. La Fayette Park Place
Department or Mail Drop	Suite 302
City	Los Angeles
County	Los Angeles
Zip Code	90057
Proposed School Campus Site	
Name	Proposed Rise Kohyang High School
Location Description	3500 West 1st Street
Pipelines of Interest	One natural gas distribution pipeline
Operator/Owner	Southern California Gas Company
Product Transported	Natural Gas
Pipeline Diameter (inches)	6-inch
Operating Pressure (psig)	MAOP 204 psig
Closest Approach to Property Line	660 feet

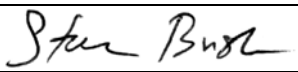
Individual Risk Estimate Result

Type of Analysis (Check One)	Stage 1		Stage 2	X	Stage 3		
Individual Risk Estimate Value	Zero (hazard footprints do not reach school site)						
Individual Risk Criterion	1.0E-06 (0.000001)						
IR Significance (check one)	**Significant**						
	Insignificant	X					

Certification and Signatures of Risk Analyst(s)

This analysis was conducted according to the 2007 CDE Protocol except as noted. All modifications within the Stage 2 framework, and exceptions to the data and processes established in the 2007 CDE Protocol, if any, were based upon my professional opinion and in a manner consistent with the standards of care and skill ordinarily exercised by professionals working on similar projects.

I certify that the estimated risk levels were derived based upon the 2007 CDE Protocol, unless otherwise noted, and that these levels demonstrate, with reasonable expectations of uncertainties for such estimates, that the estimated Individual Risk for the school site, as the site was planned at the time of this analysis, including mitigation measures, if any, meets the Individual Risk Criterion stated in the 2007 CDE Protocol, based on the information provided to me.

Printed Name	Signature	Position or Title
Steven J. Bush, P.E.		Senior Engineer

Notice: In the event that the Individual Risk Criterion could not be met, at the option of the LEA, CDE will still accept a report for review and consultation with the LEA.

6-INCH NATURAL GAS DISTRIBUTION PIPELINE

Input Data		
Product	natural gas	
Diameter	6	inches
Pressure	204	psig
R0	660	ft

XSEG	RX(1%)	Units
XSEG(LJF)	0	ft
XSEG(RJF)	0	ft
XSEG(LFF)	0	ft
XSEG(RFF)	0	ft
XSEG(LEX)	0	ft
XSEG(REX)	0	ft

Base and Conditional Probability Calculations							
Base		**Leak**		**Rupture**		**Exposure**	
F0	4.6E-05	**PC(L)**	0.80	**PC(R)**	0.20	**PC(OCC)**	0.16
P0	4.6E-05	**PC(LIG)**	0.30	**PC(RIG)**	0.45	**PC(OUT)**	0.25
PAF	1.0	**PC(FIG)**	0.99	**PC(FIG)**	0.99		
PA	4.6E-05	**PC(JF)**	0.98	**PC(JF)**	0.98		
		PC(FF)	0.01	**PC(FF)**	0.01		
		PC(EIG)	0.01	**PC(EIG)**	0.01		
Calculated Values:							
PA(LJF)	0.0E+00	**PCI(LJF)**	0.233	**PCI(RJF)**	0.087		
PA(RJF)	0.0E+00	**PCI(LFF)**	0.002	**PCI(RFF)**	0.001		
PA(LFF)	0.0E+00	**PCI(LEX)**	0.002	**PCI(REX)**	0.001	**PC(EXPO)**	0.04
PA(RFF)	0.0E+00						
PA(LEX)	0.0E+00						
PA(REX)	0.0E+00						

Impact Probability Calculations							
Probability Term				**Values**			
PC(LJF) =	**PA(LJF) x**	**PCI(LJF) x**	**PC(EXPO) =**	0.0E+00	0.23	0.040	**0.0E+00**
PC(RJF) =	**PA(RJF) x**	**PCI(RJF) x**	**PC(EXPO) =**	0.0E+00	0.09	0.040	**0.0E+00**
PC(LFF) =	**PA(LFF) x**	**PCI(LFF) x**	**PC(EXPO) =**	0.0E+00	0.002	0.040	**0.0E+00**
PC(RFF) =	**PA(RFF) x**	**PCI(RFF) x**	**PC(EXPO) =**	0.0E+00	0.001	0.040	**0.0E+00**
PC(LEX) =	**PA(LEX) x**	**PCI(LEX) x**	**PC(EXPO) =**	0.0E+00	0.002	0.040	**0.0E+00**
PC(REX) =	**PA(REX) x**	**PCI(REX) x**	**PC(EXPO) =**	0.0E+00	0.001	0.040	**0.0E+00**

Based on data from impact distance figures in Section 4.6 and mortality figures in Section 4.5, enter the maximum impact probability at receptor location for each hazard in MAX PF(X) column.

IR Calculation				
	MAX PF(X)		**PC(X)**	**IR(X)**
IR(LJF) =	1.00		0.0E+00	**0.0E+00**
IR(RJF) =	1.00		0.0E+00	**0.00E+00**
IR(LFF) =	1.00		0.0E+00	**0.00E+00**
IR(RFF) =	1.00		0.0E+00	**0.00E+00**
IR(LEX) =	0.00		0.0E+00	**0.00E+00**
IR(REX) =	0.00		0.0E+00	**0.00E+00**
TOTAL INDIVIDUAL RISK, TIR				**0.0E+00**
CDE INDIVIDUAL RISK CRITERION, IRC				**1.0E-06**
TIR/IRC RATIO				**0.00**
PROTOCOL TIR INDICATOR RATIO				**0.00**

Hazard footprints do not reach school site.

Workbook:TIR CALCS 3.07
Sheet: TIR1

XSEG Calculations

Pipe Size, Pressure, and Hazard Type			Front Property Line - Begin Zone 1			Begin Zone 2			Begin Zone 3			End Zone 3 -Back Property Line		
Pipe Size	Press.	Hazard X	RX (1%)	R0	XSEG	RX (1%)	R0	XSEG	RX (1%)	R0	XSEG	RX (1%)	R0	XSEG
(in)	(psig)		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
6	204	LJF	33	660	0	33	751	0	33	843	0	33	934	0
6	204	RJF	48	660	0	48	751	0	48	843	0	48	934	0
6	204	LFF	81	660	0	81	751	0	81	843	0	81	934	0
6	204	RFF	162	660	0	162	751	0	162	843	0	162	934	0
6	204	LEX	0	660	0	0	751	0	0	843	0	0	934	0
6	204	REX	0	660	0	0	751	0	0	843	0	0	934	0

Text Summary ALOHA® 5.4.7

```
SITE DATA:
  Location: LOS ANGELES, CALIFORNIA
  Building Air Exchanges Per Hour: 0.63 (user specified)
  Time: August 27, 2018  1419 hours PDT (using computer's clock)

CHEMICAL DATA:
  Chemical Name: METHANE
  CAS Number: 74-82-8                    Molecular Weight: 16.04 g/mol
  PAC-1: 65000 ppm   PAC-2: 230000 ppm   PAC-3: 400000 ppm
  LEL: 50000 ppm     UEL: 150000 ppm
  Ambient Boiling Point: -258.9° F
  Vapor Pressure at Ambient Temperature: greater than 1 atm
  Ambient Saturation Concentration: 1,000,000 ppm or 100.0%

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
  Wind: 3 meters/second from N at 3 meters
  Ground Roughness: urban or forest      Cloud Cover: 5 tenths
  Air Temperature: 77° F                 Stability Class: D
  No Inversion Height                    Relative Humidity: 50%

SOURCE STRENGTH:
  Flammable gas is burning as it escapes from pipe
  Pipe Diameter: 6 inches                Pipe Length: 26400 feet
  Unbroken end of the pipe is closed off
  Pipe Roughness: smooth                 Hole Area: .785 sq in
  Pipe Press: 218.7 psia                 Pipe Temperature: 77° F
  Max Flame Length: 2 yards
  Burn Duration: ALOHA limited the duration to 1 hour
  Max Burn Rate: 160 pounds/min
  Total Amount Burned: 2,832 pounds

THREAT ZONE:
  Threat Modeled: Thermal radiation from jet fire
  Red   : less than 10 meters(10.9 yards) --- (15.77 kW/(sq m))
```

Text Summary ALOHA® 5.4.7

```
SITE DATA:
  Location: LOS ANGELES, CALIFORNIA
  Building Air Exchanges Per Hour: 0.63 (user specified)
  Time: August 27, 2018  1419 hours PDT (using computer's clock)

CHEMICAL DATA:
  Chemical Name: METHANE
  CAS Number: 74-82-8                    Molecular Weight: 16.04 g/mol
  PAC-1: 65000 ppm   PAC-2: 230000 ppm   PAC-3: 400000 ppm
  LEL: 50000 ppm     UEL: 150000 ppm
  Ambient Boiling Point: -258.9° F
  Vapor Pressure at Ambient Temperature: greater than 1 atm
  Ambient Saturation Concentration: 1,000,000 ppm or 100.0%

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
  Wind: 3 meters/second from N at 3 meters
  Ground Roughness: urban or forest      Cloud Cover: 5 tenths
  Air Temperature: 77° F                 Stability Class: D
  No Inversion Height                    Relative Humidity: 50%

SOURCE STRENGTH:
  Flammable gas is burning as it escapes from pipe
  Pipe Diameter: 6 inches                Pipe Length: 26400 feet
  Unbroken end of the pipe is connected to an infinite source
  Pipe Roughness: smooth                 Hole Area: 28.3 sq in
  Pipe Press: 218.7 psia                 Pipe Temperature: 77° F
  Max Flame Length: 14 yards
  Burn Duration: ALOHA limited the duration to 1 hour
  Max Burn Rate: 5,760 pounds/min
  Total Amount Burned: 18,342 pounds

THREAT ZONE:
  Threat Modeled: Thermal radiation from jet fire
  Red   : 16 yards --- (15.77 kW/(sq m))
```

Text Summary ALOHA® 5.4.7

```
SITE DATA:
  Location: LOS ANGELES, CALIFORNIA
  Building Air Exchanges Per Hour: 0.63 (user specified)
  Time: August 27, 2018  1419 hours PDT (using computer's clock)

CHEMICAL DATA:
  Chemical Name: METHANE
  CAS Number: 74-82-8                    Molecular Weight: 16.04 g/mol
  PAC-1: 65000 ppm   PAC-2: 230000 ppm   PAC-3: 400000 ppm
  LEL: 50000 ppm     UEL: 150000 ppm
  Ambient Boiling Point: -258.9° F
  Vapor Pressure at Ambient Temperature: greater than 1 atm
  Ambient Saturation Concentration: 1,000,000 ppm or 100.0%

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
  Wind: 3 meters/second from N at 3 meters
  Ground Roughness: urban or forest      Cloud Cover: 5 tenths
  Air Temperature: 77° F                 Stability Class: D
  No Inversion Height                    Relative Humidity: 50%

SOURCE STRENGTH:
  Flammable gas escaping from pipe (not burning)
  Pipe Diameter: 6 inches                Pipe Length: 26400 feet
  Unbroken end of the pipe is closed off
  Pipe Roughness: smooth                 Hole Area: .785 sq in
  Pipe Press: 218.7 psia                 Pipe Temperature: 77° F
  Release Duration: ALOHA limited the duration to 1 hour
  Max Average Sustained Release Rate: 144 pounds/min
     (averaged over a minute or more)
  Total Amount Released: 2,832 pounds

THREAT ZONE:
  Threat Modeled: Flammable Area of Vapor Cloud
  Model Run: Gaussian
  Red    : 27 yards --- (50000 ppm = LEL)
  Note: Threat zone was not drawn because effects of near-field patchiness
     make dispersion predictions less reliable for short distances.
```

Text Summary ALOHA® 5.4.7

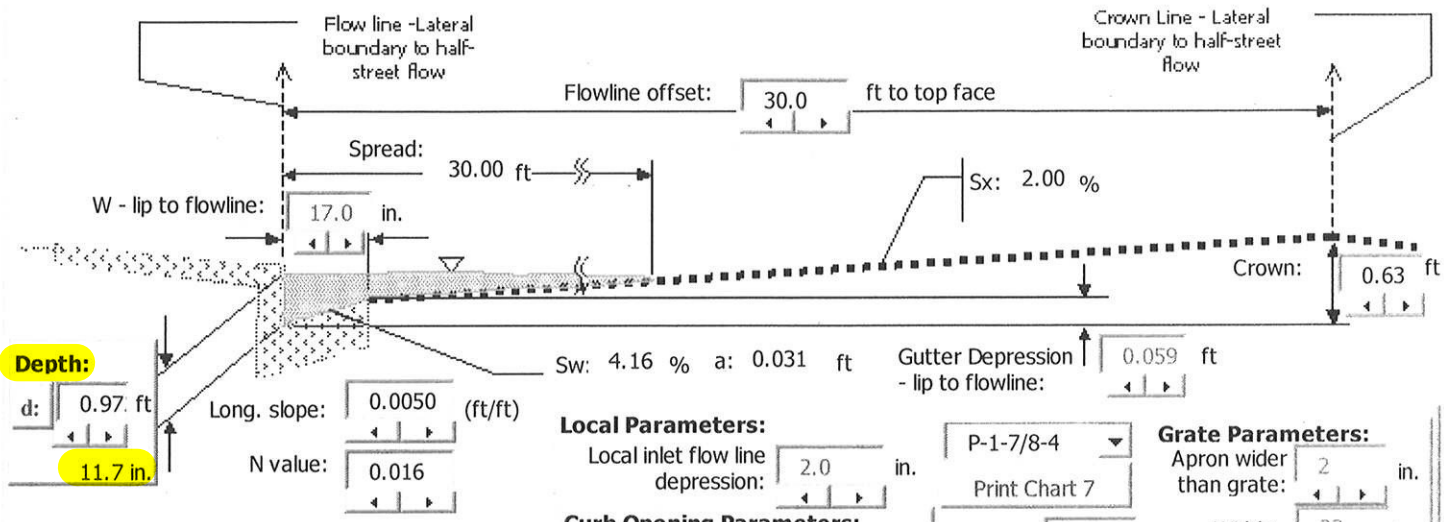
```
SITE DATA:
  Location: LOS ANGELES, CALIFORNIA
  Building Air Exchanges Per Hour: 0.63 (user specified)
  Time: August 27, 2018  1419 hours PDT (using computer's clock)

CHEMICAL DATA:
  Chemical Name: METHANE
  CAS Number: 74-82-8                    Molecular Weight: 16.04 g/mol
  PAC-1: 65000 ppm   PAC-2: 230000 ppm   PAC-3: 400000 ppm
  LEL: 50000 ppm     UEL: 150000 ppm
  Ambient Boiling Point: -258.9° F
  Vapor Pressure at Ambient Temperature: greater than 1 atm
  Ambient Saturation Concentration: 1,000,000 ppm or 100.0%

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
  Wind: 3 meters/second from N at 3 meters
  Ground Roughness: urban or forest      Cloud Cover: 5 tenths
  Air Temperature: 77° F                 Stability Class: D
  No Inversion Height                    Relative Humidity: 50%

SOURCE STRENGTH:
  Flammable gas escaping from pipe (not burning)
  Pipe Diameter: 6 inches                Pipe Length: 26400 feet
  Unbroken end of the pipe is connected to an infinite source
  Pipe Roughness: smooth                 Hole Area: 28.3 sq in
  Pipe Press: 218.7 psia                 Pipe Temperature: 77° F
  Release Duration: ALOHA limited the duration to 1 hour
  Max Average Sustained Release Rate: 574 pounds/min
     (averaged over a minute or more)
  Total Amount Released: 18,342 pounds

THREAT ZONE:
  Threat Modeled: Flammable Area of Vapor Cloud
  Model Run: Gaussian
  Red    : 54 yards --- (50000 ppm = LEL)
  Note: Threat zone was not drawn because effects of near-field patchiness
     make dispersion predictions less reliable for short distances.
```

Modified Manning's Equation Solver

Version: 3.0<>5/10/2017 2:56:55 PM

Print | Save | Quit

Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Street Parameters:

Q:	98.17	cfs
K:	1,388.3	
Vel:	5.09	ft/s
Eo:	8.6	%
W/T:	0.0472	

Standard Manning's:

Q:	92.31	cfs
K:	1,305.4	
Vel:	4.79	ft/s
Rh:	0.62	ft
Area:	19.28	sf

Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 3.19 %

Length of curb opening inlet: 12.0 ft

Lt: 79.31 ft

80 % Clear Efficiency 20.7 %

Curb opening flowby: 77.83 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 6.25 ft/s

Eo: 14.67 %

Rs: 3.81 % Rf: 100.00 %

Side flow captured: 2.75 cfs Frontal captured: 5.71 cfs

Total combined CB flowby: 69.37 cfs

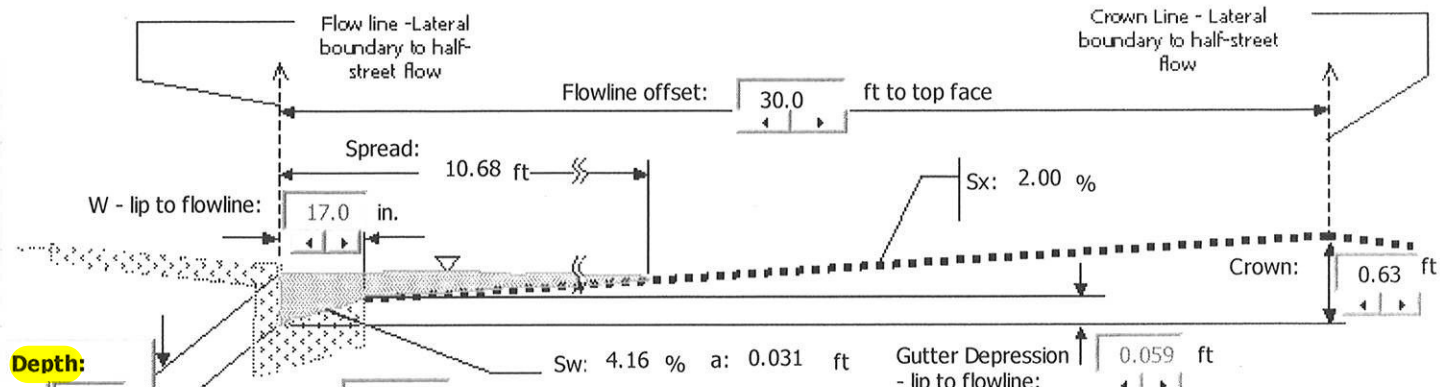
Street Flow - 1st Street
60-Inch Water Main

Modified Manning's Equation Solver

Version: 3.0<>5/10/2017 2:56:55 PM

Print | Save | Quit

Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Street Parameters:

Q:	3.93	cfs
K:	29.5	
Vel:	3.38	ft/s
Eo:	34.4	%
W/T:	0.1327	

Standard Manning's:

Q:	3.22	cfs
K:	24.2	
Vel:	2.77	ft/s
Rh:	0.11	ft
Area:	1.16	sf

Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 6.79 %

Length of curb opening inlet: 12.0 ft

Lt: 19.08 ft

80 % Clear Efficiency 71.6 %

Curb opening flowby: 1.12 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 3.83 ft/s

Eo: 98.77 %

Rs: 5.73 % Rf: 100.00 %

Side flow captured: 0.03 cfs Frontal captured: 0.55 cfs

Total combined CB flowby: 0.53 cfs

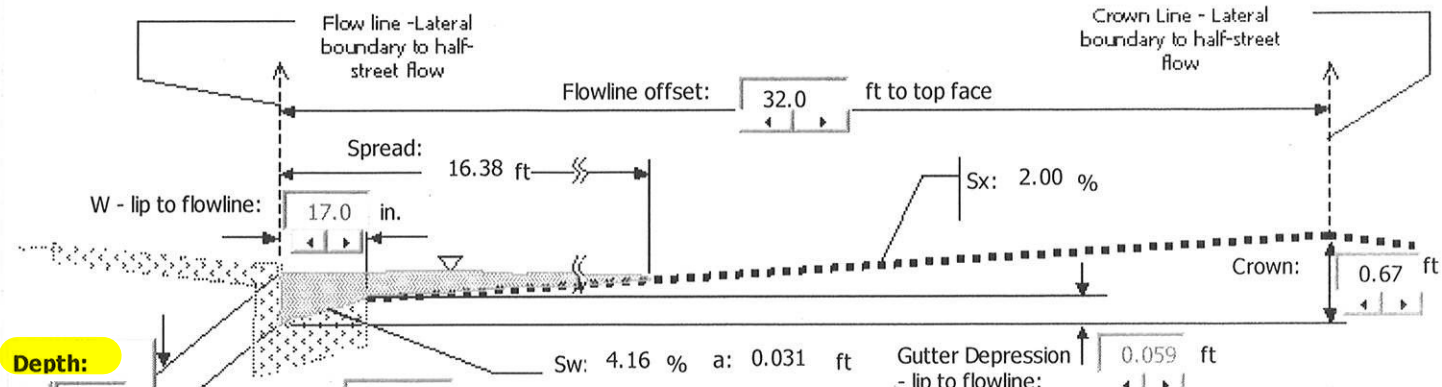
Street Flow - 1st Street, East of Vermont Avenue
12-Inch Water Main

Modified Manning's Equation Solver

Version: 3.0<>5/10/2017 2:56:55 PM

Print | Save | Quit

Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 5.18 %

Length of curb opening inlet: 12.0 ft

Lt: 47.21 ft

80 % Clear Efficiency 33.6 %

Curb opening flowby: 10.43 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 7.98 ft/s

Eo: 50.81 %

Rs: 2.53 % Rf: 100.00 %

Side flow captured: 0.20 cfs Frontal captured: 2.65 cfs

Total combined CB flowby: 7.59 cfs

Street Parameters:

Q:	15.71	cfs
K:	90.3	
Vel:	5.82	ft/s
Eo:	22.8	%
W/T:	0.0865	

Standard Manning's:

Q:	12.95	cfs
K:	74.4	
Vel:	4.79	ft/s
Rh:	0.16	ft
Area:	2.70	sf

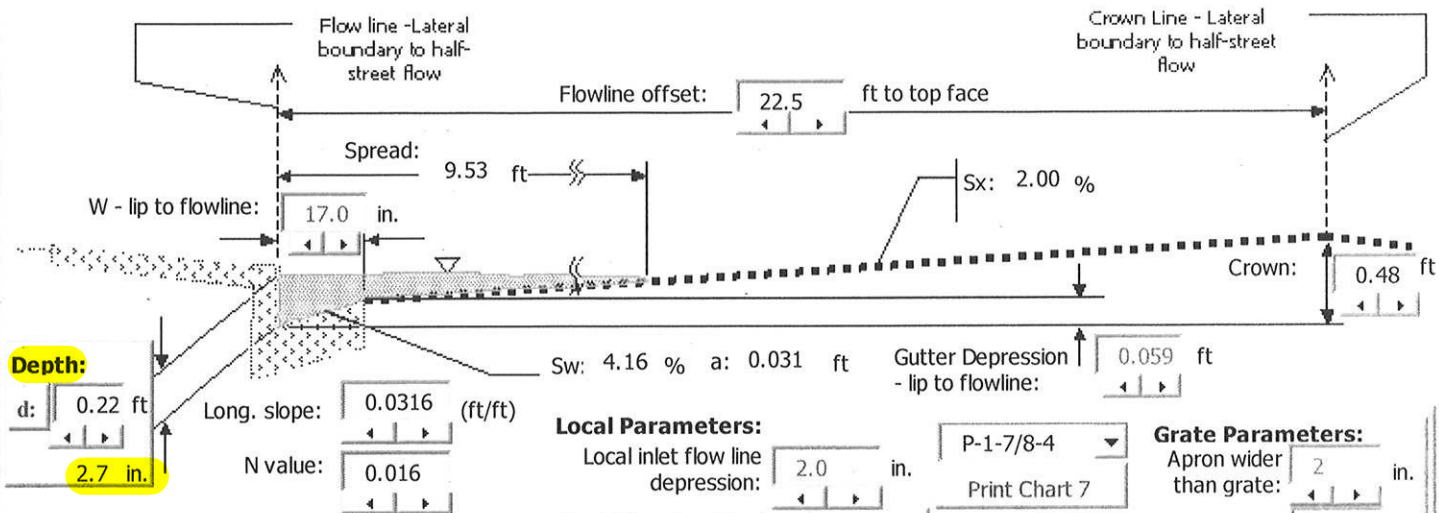
Street Flow - 3rd Street, West of Vermont Avenue
24-Inch Water Main

Modified Manning's Equation Solver

Version: 3.0<>5/10/2017 2:56:55 PM

Print | Save | Quit

Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Street Parameters:

Q:	3.91	cfs
K:	22.0	
Vel:	4.21	ft/s
Eo:	38.2	%
W/T:	0.1487	

Standard Manning's:

Q:	3.19	cfs
K:	18.0	
Vel:	3.44	ft/s
Rh:	0.10	ft
Area:	0.93	sf

Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 7.32 %

Length of curb opening inlet: 12.0 ft

Lt: 21.66 ft

80 % Clear Efficiency 65.2 %

Curb opening flowby: 1.36 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 4.99 ft/s

Eo: 99.51 %

Rs: 3.50 % Rf: 100.00 %

Side flow captured: 0.02 cfs Frontal captured: 0.68 cfs

Total combined CB flowby: 0.66 cfs

Street Flow - 3rd Street, East of Vermont Avenue
12-Inch Water Main

Modified Manning's Equation Solver

Version: 3.0<>5/10/2017 2:56:55 PM

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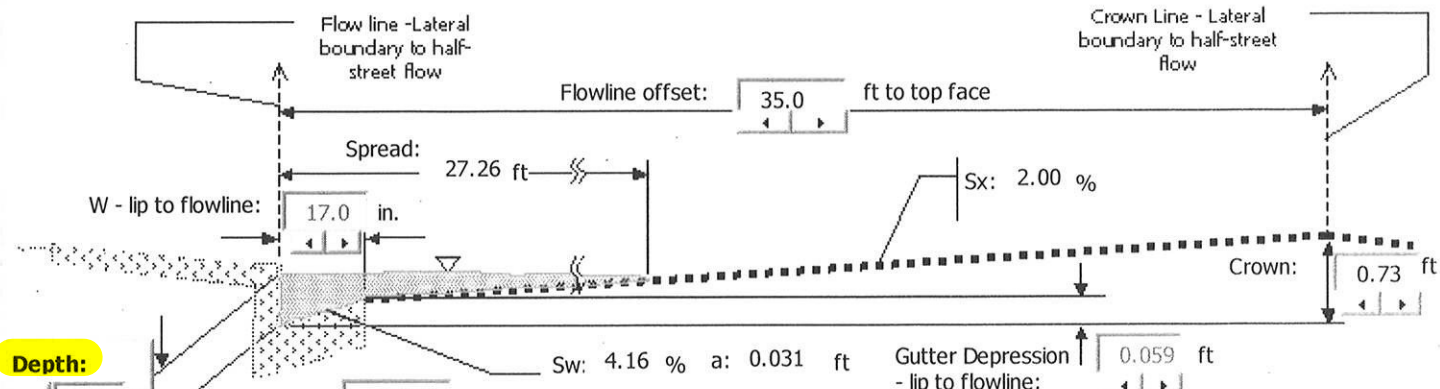
Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Street Parameters:

Q:	24.54	cfs
K:	347.0	
Vel:	3.30	ft/s
Eo:	13.8	%
W/T:	0.0520	

Standard Manning's:

Q:	20.29	cfs
K:	287.0	
Vel:	2.73	ft/s
Rh:	0.27	ft
Area:	7.44	sf

Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 3.92 %

Length of curb opening inlet: 12.0 ft

Lt: 39.16 ft

80 % Clear Efficiency 39.7 %

Curb opening flowby: 14.79 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 4.26 ft/s

Eo: 29.35 %

Rs: 7.88 % Rf: 100.00 %

Side flow captured: 0.99 cfs Frontal captured: 2.17 cfs

Total combined CB flowby: 11.63 cfs

Street Flow - Vermont Avenue
30-Inch Water Main

Modified Manning's Equation Solver

Version: 3.0<>5/10/2017 2:56:55 PM

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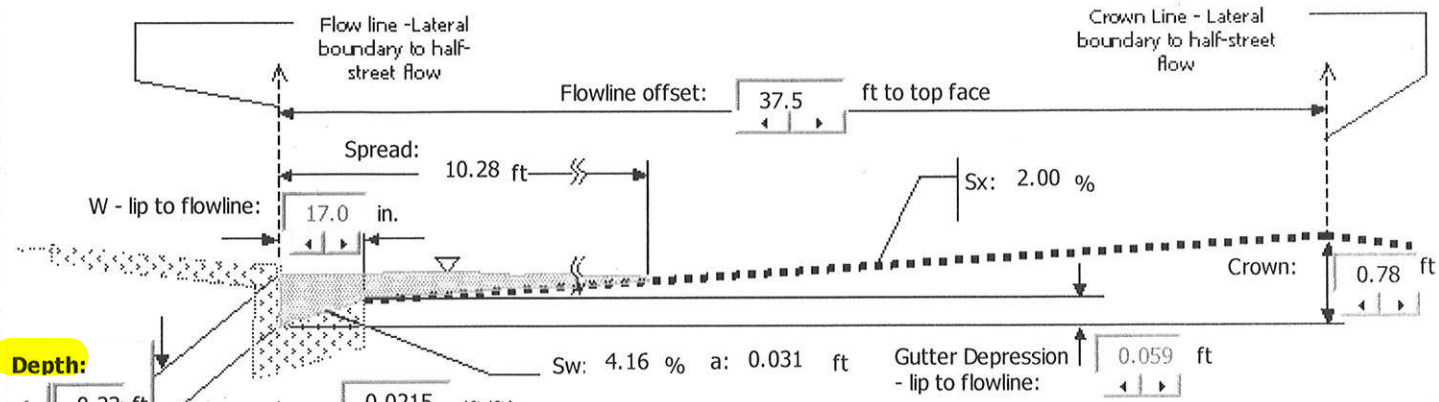
Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Street Parameters:

Q:	3.93	cfs
K:	26.8	
Vel:	3.64	ft/s
Eo:	35.6	%
W/T:	0.1378	

Standard Manning's:

Q:	3.22	cfs
K:	21.9	
Vel:	2.98	ft/s
Rh:	0.10	ft
Area:	1.08	sf

Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 6.96 %

Length of curb opening inlet: 12.0 ft

Lt: 19.93 ft

80 % Clear Efficiency 69.4 %

Curb opening flowby: 1.20 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 4.20 ft/s

Eo: 98.97 %

Rs: 4.86 % Rf: 100.00 %

Side flow captured: 0.03 cfs Frontal captured: 0.60 cfs

Total combined CB flowby: 0.58 cfs

Street Flow - Vermont Avenue,
North of Beverly Boulevard
12-Inch Water Main

Modified Manning's Equation Solver

Version: 3.0<>5/10/2017 2:56:55 PM

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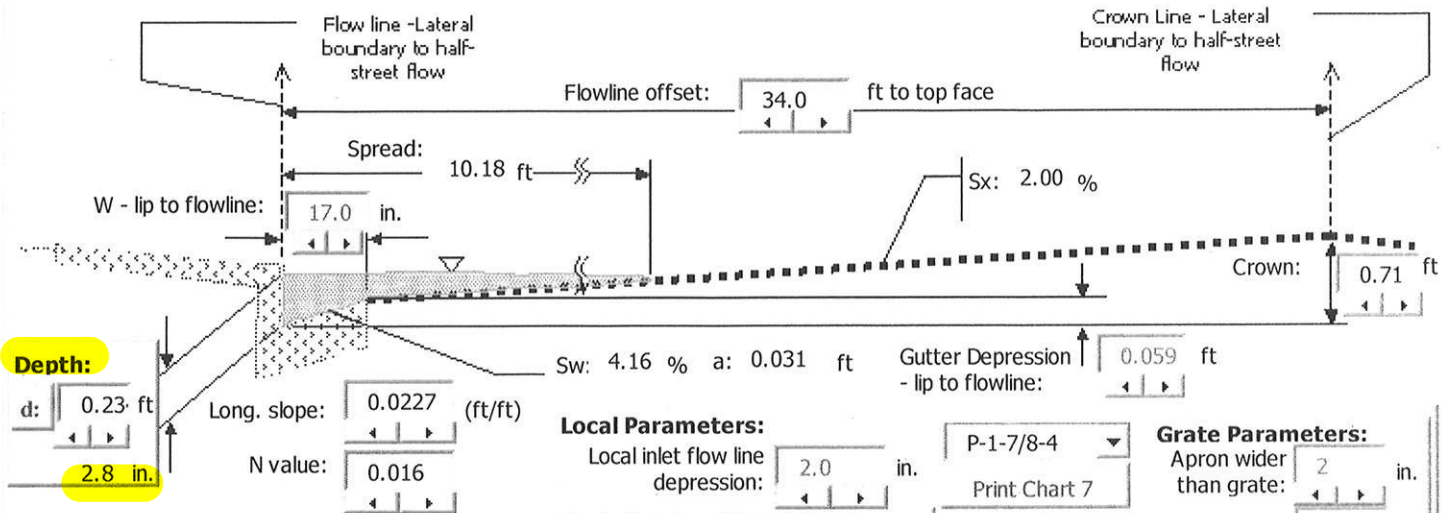
Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Street Parameters:

Q:	3.93	cfs
K:	26.1	
Vel:	3.72	ft/s
Eo:	36.0	%
W/T:	0.1392	

Standard Manning's:

Q:	3.21	cfs
K:	21.3	
Vel:	3.04	ft/s
Rh:	0.10	ft
Area:	1.06	sf

Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 7.01 %

Length of curb opening inlet: 12.0 ft

Lt: 20.17 ft

80 % Clear Efficiency 68.7 %

Curb opening flowby: 1.23 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 4.30 ft/s

Eo: 99.04 %

Rs: 4.64 % Rf: 100.00 %

Side flow captured: 0.03 cfs Frontal captured: 0.61 cfs

Total combined CB flowby: 0.59 cfs

Street Flow - Virgil Avenue
12-Inch Water Main

Modified Manning's Equation Solver

Version: 3.0<>5/10/2017 2:56:55 PM

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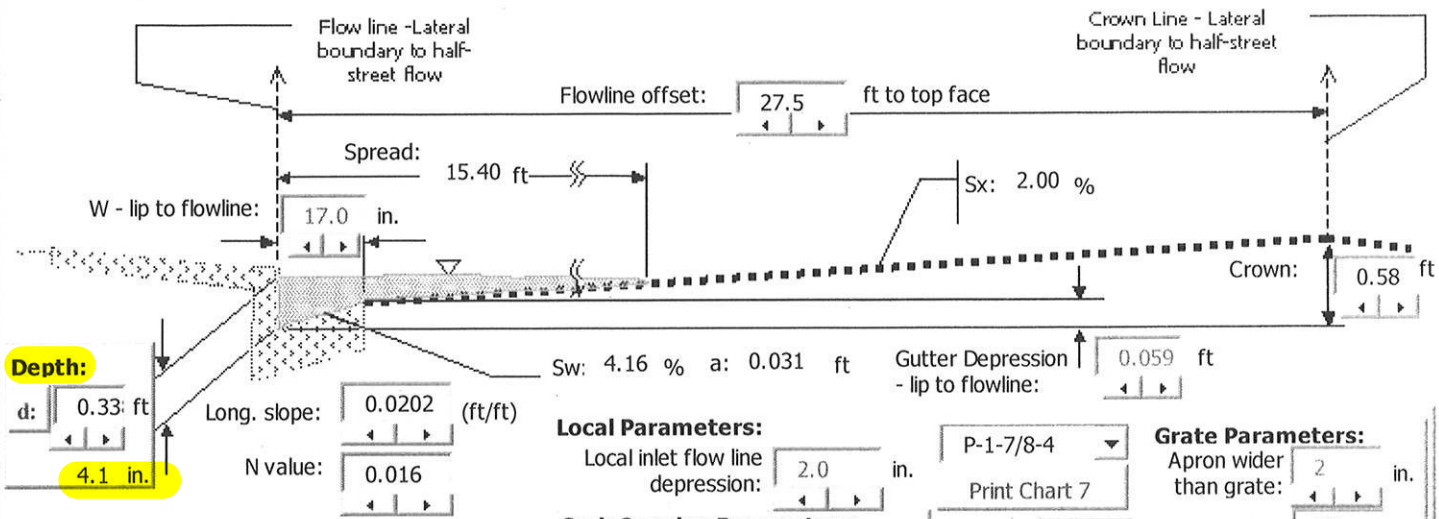
Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Street Parameters:

Q:	10.91	cfs
K:	76.8	
Vel:	4.56	ft/s
Eo:	24.2	%
W/T:	0.0920	

Standard Manning's:

Q:	8.99	cfs
K:	63.2	
Vel:	3.76	ft/s
Rh:	0.15	ft
Area:	2.39	sf

Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 5.37 %

Length of curb opening inlet: 12.0 ft

Lt: 35.08 ft

80 % Clear Efficiency 43.8 %

Curb opening flowby: 6.14 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 6.06 ft/s

Eo: 58.48 %

Rs: 3.94 % Rf: 100.00 %

Side flow captured: 0.17 cfs Frontal captured: 1.79 cfs

Total combined CB flowby: 4.17 cfs

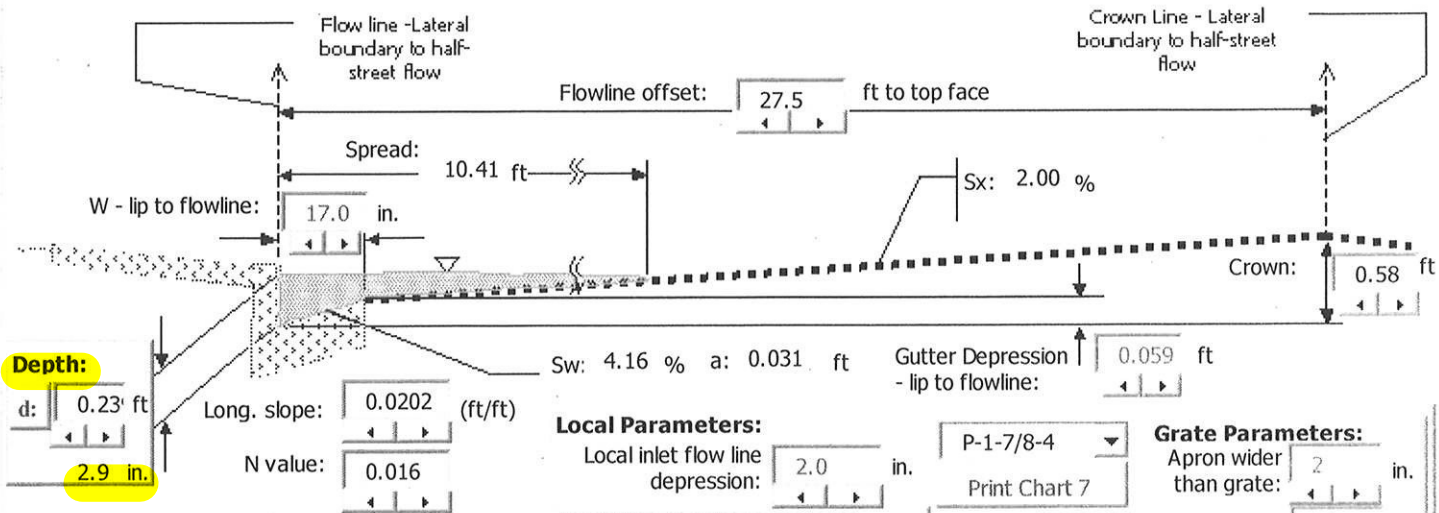
Street Flow - Beverly Boulevard
20-Inch Water Main

Modified Manning's Equation Solver

Version: 3.0<>5/10/2017 2:56:55 PM

Print | Save | Quit

Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Street Parameters:

Q:	3.93	cfs
K:	27.7	
Vel:	3.56	ft/s
Eo:	35.2	%
W/T:	0.1361	

Standard Manning's:

Q:	3.22	cfs
K:	22.6	
Vel:	2.91	ft/s
Rh:	0.10	ft
Area:	1.10	sf

Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 6.90 %

Length of curb opening inlet: 12.0 ft

Lt: 19.66 ft

80 % Clear Efficiency 70.1 %

Curb opening flowby: 1.18 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 4.08 ft/s

Eo: 98.90 %

Rs: 5.12 % Rf: 100.00 %

Side flow captured: 0.03 cfs Frontal captured: 0.58 cfs

Total combined CB flowby: 0.56 cfs

Street Flow - Beverly Boulevard
12-Inch Water Main

Modified Manning's Equation Solver

Version: 3.0<>5/10/2017 2:56:55 PM

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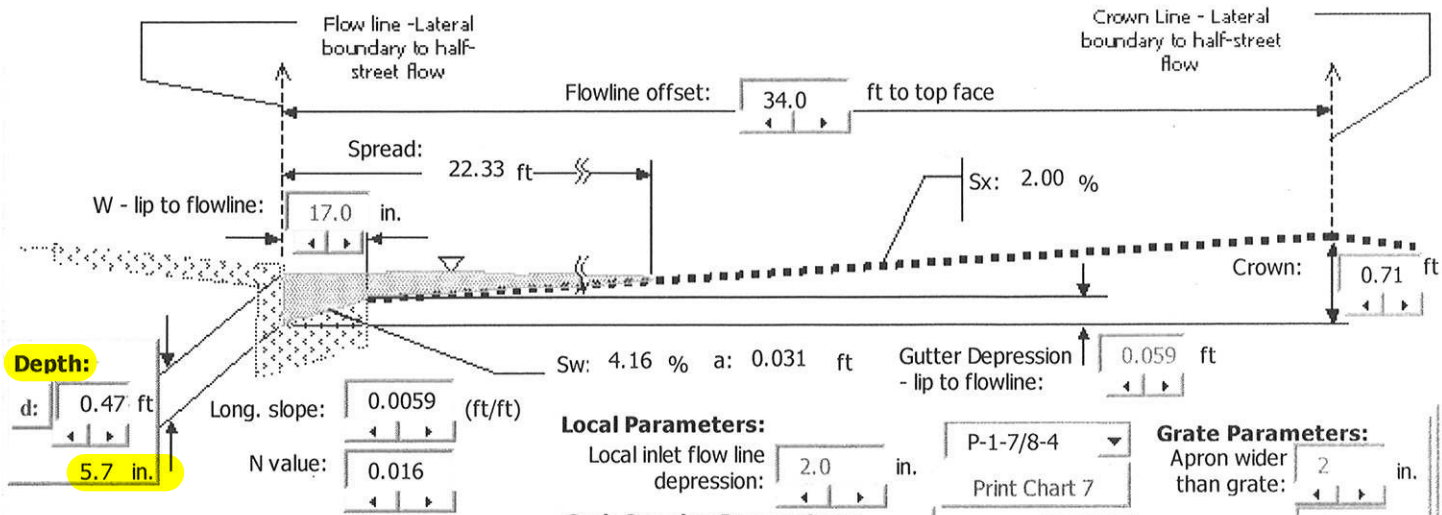
Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Street Parameters:

Q:	15.71	cfs
K:	204.5	
Vel:	3.14	ft/s
Eo:	16.8	%
W/T:	0.0634	

Standard Manning's:

Q:	12.98	cfs
K:	169.0	
Vel:	2.59	ft/s
Rh:	0.22	ft
Area:	5.00	sf

Local Parameters:

Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:

C-O Apron wider than gutter: 0 in.

S'w 13.9 % Se: 4.34 %

Length of curb opening inlet: 12.0 ft

Lt: 32.10 ft

80 % Clear Efficiency 47.2 %

Curb opening flowby: 8.29 cfs

P-1-7/8-4

Print Chart 7

Grate Parameters:

Apron wider than grate: 2 in.

Length: 48 in. Width: 22 in.

% Factor 50 % Factor 50

Splash-over Vel: 7.41 ft/s Vel over grate: 4.00 ft/s

Eo: 39.29 %

Rs: 8.56 % Rf: 100.00 %

Side flow captured: 0.57 cfs Frontal captured: 1.63 cfs

Total combined CB flowby: 6.09 cfs

Street Flow - Temple Street
24-Inch Water Main

Modified Manning's Equation Solver
Version: 3.0<>5/10/2017 2:56:55 PM

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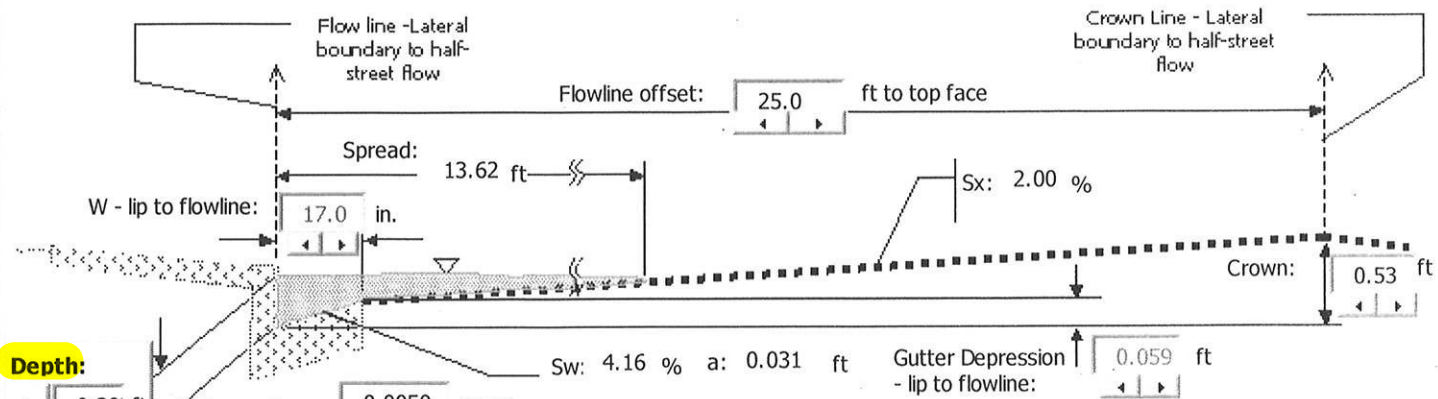
Parameters | Composite Triangular Sections | Head - Discharge Table | Assumptions | Inlet Geometry | Disclaimer



Local Parameters:
Local inlet flow line depression: 2.0 in.

Curb Opening Parameters:
C-O Apron wider than gutter: 0 in.
S'w 13.9 % Se: 5.80 %
Length of curb opening inlet: 12.0 ft
Lt: 14.35 ft
80 % Clear Efficiency 86.3 %
Curb opening flowby: 0.54 cfs

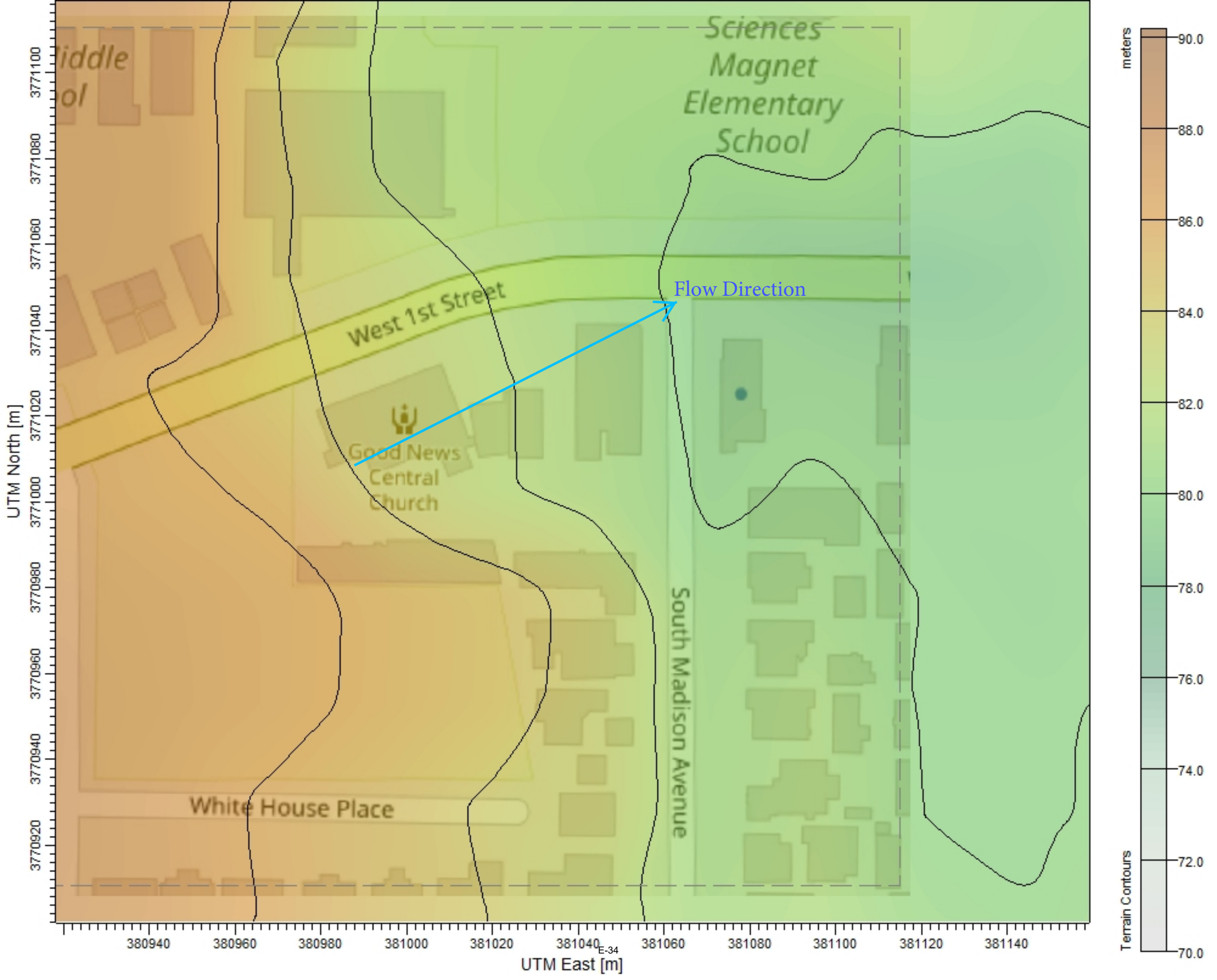
P-1-7/8-4
Print Chart 7

Grate Parameters:
Apron wider than grate: 2 in.
Length: 48 in. Width: 22 in.
% Factor 50 % Factor 50
Splash-over Vel: 7.41 ft/s Vel over grate: 1.98 ft/s
Eo: 99.55 %
Rs: 16.01 % Rf: 100.00 %
Side flow captured: 0.04 cfs Frontal captured: 0.27 cfs
Total combined CB flowby: 0.23 cfs

Street Parameters:
Q: 3.93 cfs
K: 55.6
Vel: 2.10 ft/s
Eo: 27.3 %
W/T: 0.1040

Standard Manning's:
Q: 3.23 cfs
K: 45.7
Vel: 1.72 ft/s
Rh: 0.13 ft
Area: 1.87 sf

Street Flow - Silver Lake Boulevard
12-Inch Water Main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Flow Direction
Good News Central Church
South Madison Avenue
White House Place
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3771060
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76.0
74.0
72.0
70.0
Terrain Contours

Appendix B. Agency Correspondence

From: Covarrubias, Cleofas
To: Danielle Clendening
Subject: 3500 W 1st St, Los Angeles
Date: Friday, August 24, 2018 7:45:57 AM
Attachments: image001.wmz
image002.png
image003.png
oledata.mso

August 24, 2018

Danielle Clendening

Project Location: 3500 W 1st St. Los Angeles, Ca 90004

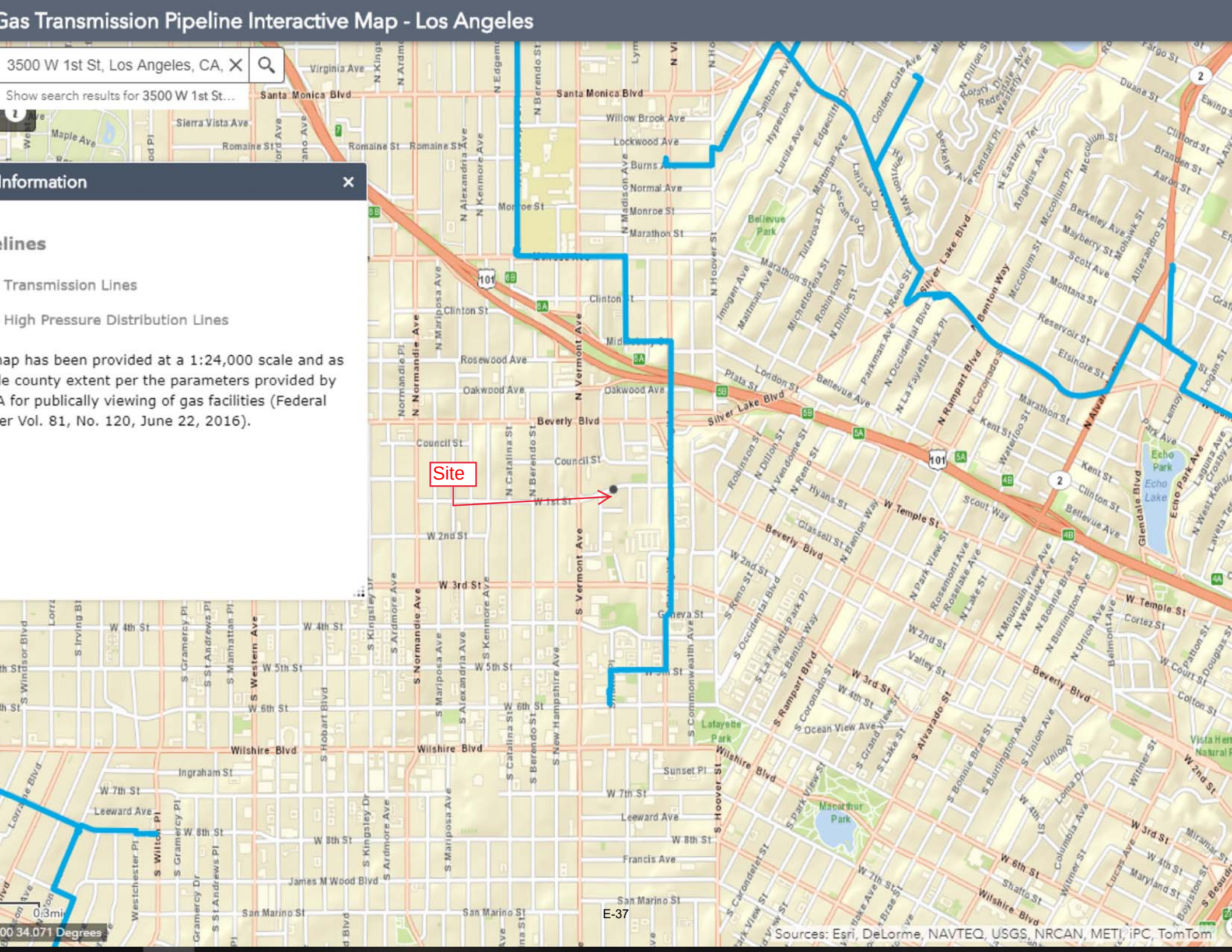
The Gas Company, Northwest Region's, Plan File No. 43-2018-08-00010
Please refer to the above Plan File number in all future correspondence.

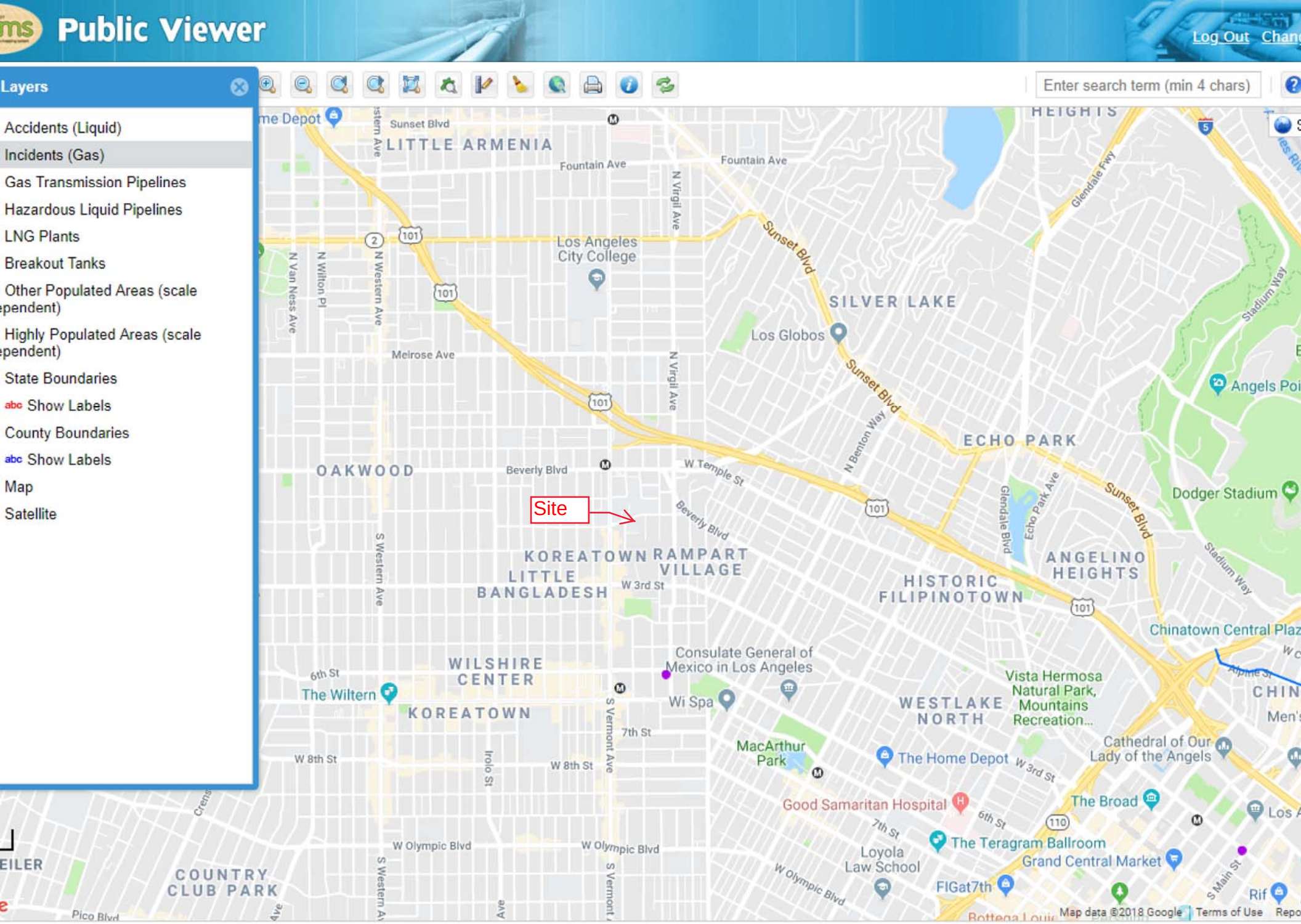
After reviewing your request, the only High Pressure Line we have within a 1,500' radius of your potential development site is a 6" High Pressure Line located on Virgil Ave. That Line currently is set to operate at 195 psig and has a Maximum Operating Pressure of 204 psig.

Feel free to contact me if you have any further questions regarding this project.

Sincerely,

Cleo Covarrubias
Planning Associate- Compton H/Q
Northwest Region – Gas Ops
Southern California Gas Company
310-687-2079
CCovarrubias@semprautilities.com


Gas Transmission Pipeline Interactive Map - Los Angeles
3500 W 1st St, Los Angeles, CA,
Show search results for 3500 W 1st St...
Information
elines
Transmission Lines
High Pressure Distribution Lines
hap has been provided at a 1:24,000 scale and as
le county extent per the parameters provided by
A for publically viewing of gas facilities (Federal
er Vol. 81, No. 120, June 22, 2016).
Site
Santa Monica Blvd
Virginia Ave
Sierra Vista Ave
Romaine St
Willow Brook Ave
Lockwood Ave
Burns Ave
Normal Ave
Monroe St
Marathon St
Clinton St
Rosewood Ave
Oakwood Ave
Beverly Blvd
Council St
W 1st St
W 2nd St
W 3rd St
W 4th St
W 5th St
W 6th St
W 7th St
W 8th St
Wilshire Blvd
Ingraham St
Leeward Ave
Francis Ave
James M Wood Blvd
San Marino St
Sunset Pl
Geneva St
Silver Lake Blvd
Bellevue Ave
London St
Plata St
Reservoir St
Montana St
Scott Ave
Mayberry St
Berkeley Ave
Kent St
Waterloo St
Hyans St
Glassell St
Scout Way
Valley St
Ocean View Ave
Lafayette Park
Macarthur Park
Echo Park
Echo Lake
Glendale Blvd
Cortez St
Colton St
Vista Hermosa Natural Park
Sources: Esri, DeLorme, NAVTEQ, USGS, NRCAN, METI, iPC, TomTom
0.3mi
00 34.071 Degrees



From:	Wang, Ruipin
To:	Danielle Clendening
Cc:	Patterson, Mark
Subject:	RE: Water facilities for a site in Koreatown, Los Angeles
Date:	Thursday, June 21, 2018 3:28:31 PM
Attachments:	image001.jpg image002.jpg WSMs.pdf

Danielle,

Please see attached are our Water Service Maps (WSM) for the area you requested.

Ruipin Wang
Civil Engineering Associate
Los Angeles Department of Water And Power
Water Distribution – Central District
111 N Hope Street, JFB 1425
(213)367-1244
Ruipin.Wang@ladwp.com

From: Patterson, Mark
Sent: Thursday, June 21, 2018 8:00 AM
To: Wang, Ruipin
Cc: dbclendening@placeworks.com
Subject: FW: Water facilities for a site in Koreatown, Los Angeles

Ruipin,

This is in Central District, please assist.

Thank you,

Mark Patterson
LADWP Water Distribution Associate Engineer
(213) 367-1219

From: Danielle Clendening [mailto:dbclendening@placeworks.com]
Sent: Tuesday, June 19, 2018 1:13 PM
To: Patterson, Mark
Subject: Water facilities for a site in Koreatown, Los Angeles

Dear Mark Patterson,

Pacific Charter School Development, in compliance with CCR Title V Section 14010 (h), has contracted the services of PlaceWorks to complete safety hazard assessments related to water pipelines 12-inches in diameter or greater located within a 1,500-foot radius of a prospective school site in Koreatown, Los Angeles. The site is a 1.15-acre parcel located at 3500 West 1st Street, Los Angeles. This letter requests the location and diameter of all water lines 12-inches in diameter or

greater and pressurized sewer lines operated by the City of Los Angeles located within a 1,500-foot radius of the two sites. I have attached a map with the site highlighted in red and a yellow circle showing an approximate 1,500-foot radius around the site.

The Client contact for this project is:

Elijah Sugay, Bright Star School Support Team
600 S. La Fayette Park Place
Los Angeles, CA 90057

Thank you so much for your help, and please contact me if you have any questions or need more information.

DANIELLE CLENDENING
Intern

2850 Inland Empire Boulevard, Suite B | Ontario, California 91764
909.989.4449 | dbclendening@placeworks.com | placeworks.com