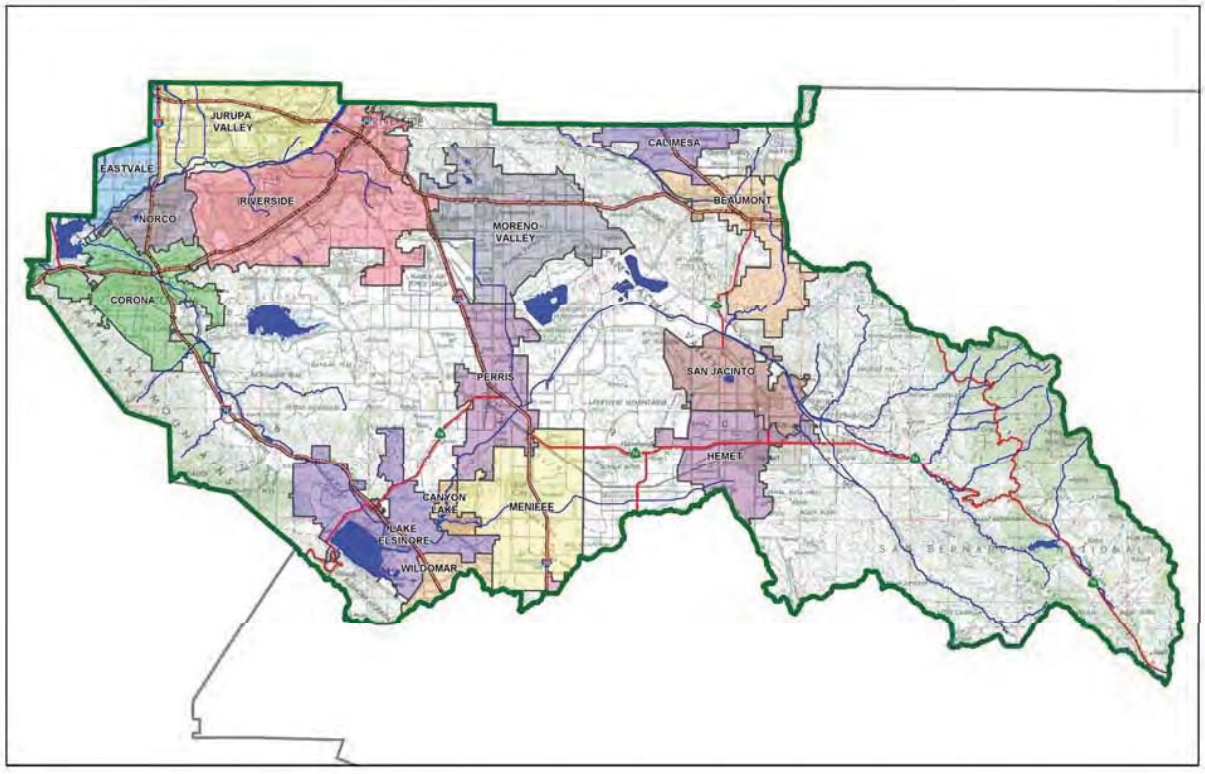
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: Center Street Industrial Block

Public Works No: _____

Design Review/Case No: P14-1033



Contact Information:

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☒ **Preliminary**
☐ **Final**

Original Date Prepared: October 9, 2014

Revision Date(s): N/A

Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**

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OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for Transition Properties by Psomas. for the Center Street Industrial Block project.

This WQMP is intended to comply with the requirements of the City of Riverside for design review of the proposed 308,000 SF industrial complex, Planning Case No. P14-1033 which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under the City of Riverside Water Quality Ordinance (Municipal Code Section 14.12.315).

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature	Date
Owner's Printed Name	Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

Preparer's Signature	Date
Andrew Woodard, PE Preparer's Printed Name	Project Engineer Preparer's Title/Position

Preparer's Licensure:

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Section A: Project and Site Information

This project is a proposal to build a new industrial building and adjoining parking lot on APNs 246-070-002, 017, 246-040-026, and 027. Stormwater from the site will be treated by an infiltration basin at the Southeast corner of the site.

PROJECT INFORMATION		
Type of Project:	Commercial warehouse	
Planning Area:	Ward 1, City of Riverside, County of Riverside	
Community Name:	Northside	
Development Name:	Center Street Industrial Block	
PROJECT LOCATION		
Latitude & Longitude (DMS): 34° 01' 07"N, 117° 21' 18"W		
Project Watershed and Sub-Watershed: Santa Ana; Santa Ana River, Reach 3		
APN(s): 246-070-002, 017, 246-040-026, and 027		
Map Book and Page No.: Book 1, Page 20 of Maps, Riverside County Records		
PROJECT CHARACTERISTICS		
Proposed or Potential Land Use(s)	Industrial Warehouse	
Proposed or Potential SIC Code(s)	4225	
Area of Impervious Project Footprint (SF)	582,839 SF	
Total Area of proposed Impervious Surfaces within the Project Limits (SF)/or Replacement	582,839 SF	
Does the project consist of offsite road improvements?	☒ Y	☐ N
Does the project propose to construct unpaved roads?	☐ Y	☒ N
Is the project part of a larger common plan of development (phased project)?	☐ Y	☒ N
EXISTING SITE CHARACTERISTICS		
Total area of existing Impervious Surfaces within the project limits (SF)	0 SF	
Is the project located within any MSHCP Criteria Cell?	☐ Y	☒ N
If so, identify the Cell number:	N/A	
Are there any natural hydrologic features on the project site?	☐ Y	☒ N
Is a Geotechnical Report attached?	☒ Y	☐ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)	N/A	
What is the Water Quality Design Storm Depth for the project?	0.65 in	

A.1 Maps and Site Plans

Appendix 1 includes a map of the local vicinity and existing site. In addition, WQMP Site Plan, located in Appendix 1, includes the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling

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A.2 Receiving Waters

In order of upstream to downstream, the receiving waters the project site is tributary to are as follows:

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Lake Evans (801.27)	**None**	**REC1, REC2, WARM, COLD, WILD**	**Not a water body classified as RARE**
Santa Ana River, Reach 3 (801.21)	**Pathogens**	**AGR, GWR, REC1, REC2, WILD, WARM, RARE**	**2.5 Miles**
Prado Basin Management Zone (801.11)	None	REC1, REC2, WARM, WILD, RARE	19 Miles
Santa Ana River, Reach 2 (801.11)	None	AGR, GWR, REC1, REC2, WILD, WARM, RARE	21 Miles
Santa Ana River, Reach 1 (801.11)	None	REC1, REC2, WILD, WARM	Not a water body classified as RARE
Tidal Prism of Santa Ana River (to within 1000' of Victoria Street) and Newport Slough (801.11)	None	REC1, REC2, COMM, WILD, RARE, MAR	45 Miles
Pacific Ocean Nearshore Zone (801.11)	None	IND, NAV, REC1, REC2, COMM, WILD, RARE, SPWN, MAR, SHEL	49 Miles
Pacific Ocean Offshore Zone (---)	None	IND, NAV, REC1, REC2, COMM, WILD, RARE, SPWN, MAR	52 Miles

Note: Proximate receiving waters are identified in bold.

See Receiving Waters Diagram in Appendix 1

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A.3 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	☐ Y	☒ N
US Army Corps of Engineers, CWA Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)*		
City of Riverside Conditional Use Permit	☐ Y	☒ N
City of Riverside Design Review	☒ Y	☐ N
City of Riverside Building Permit	☒ Y	☐ N
City of Riverside Grading Permit	☒ Y	☐ N
City of Riverside Construction Permit	☒ Y	☐ N

Section B: Optimize Site Utilization (LID Principles)

Site Optimization

Does the project identify and preserve existing drainage patterns? If so, how? If not, why?

Yes, this site strives to keep the drainage proceeding to the south westerly corner of the site, which is where the historical flows have always gone. In addition, there are historic tributary flows that are entering this site from the north westerly corner of the site in a concentrated manner. The existing drainage pattern included ponding on Center Street. The proposed site will included a 20 foot wide drainage easement to carry the offsite flows through the site and outlet into Placentia Lane.

Does the project identify and protect existing vegetation? If so, how? If not, why?

No, the existing site is in a rural area and what little vegetation that is place does not lend itself to the development standards. New landscaping is proposed and will be integrated into the proposed parking lot and street adjacent landscaped areas.

Does the project identify and preserve natural infiltration capacity? If so, how? If not, why?

Yes, the current infiltration capacity is comprised of the existing soils natural infiltration ability. The proposed site layout includes an infiltration basin that will serve to mimic and exceed the existing infiltration capacity.

Does the project identify and minimize impervious area? If so, how? If not, why?

Yes, landscaped areas are distributed equally throughout the parking lot and the south easterly corner of the site will serve as a landscaped infiltration basin.

Does the project identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

Yes, the proposed building will have roof drains that are directed over proposed landscaped areas before being routed to the landscaped infiltration basin.

Section C: Delineate Drainage Management Areas (DMAs)

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s)	Area (Sq. Ft.)	DMA Type
1-A	Concrete	5917	D
1-B	Landscape	51098	D
1-C	Roofs	303591	D
1-D	Asphalt	194632	D
1-E	Landscaped Infiltration Basin	20210	D
2-B	Natural Soil (C)	11745	A
3-A	Concrete	5355	D
3-B	Landscape	4308	D
3-D	Roofs	22992	D
3-E	Infiltration Trench	803	D
4-A	Concrete	7419	D
4-B	Landscape	9418	D
4-D	Roofs	30720	D
4-E	Infiltration Trench	925	D
5-F	Landscape	11647	A

Table C.2 Type 'A', Self-Treating Areas

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
2-B	11745	Natural Channel with Depressed Overflow Outlet	N/A
3-F	11647	Ornamental Landscape	Per approved Landscape Architects Plan

Table C.3 Type 'B', Self-Retaining Areas

Self-Retaining Area				**Type 'C' DMAs that are draining to the Self-Retaining Area**		
DMA Name/ ID	**Post-project surface type**	**Area (square feet)** [A]	**Storm Depth (inches)** [B]	**DMA Name / ID**	**[C] from Table C.4 =** [C]	**Required Retention Depth (inches)** [D]
1-E	Landscaped Infiltration Basin	20210	0.65	1-Total	455337.1	15.3
3-E	Infiltration Trench	803	0.65	3-Total	25761.5	21.5

Self-Retaining Area				Type 'C' DMAs that are draining to the Self-Retaining Area		
DMA Name/ ID	Post-project surface type	Area (square feet) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C] from Table C.4 = [C]	Required Retention Depth (inches) [D]
4-E	Infiltration Trench	925	0.65	4-Total	35060.2	25.3

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet) [A]	Post-project surface type	Runoff factor [B]	Product [C] = [A] x [B]	DMA name /ID	Area (square feet) [D]	Ratio [C]/[D]
1-A	5917	Concrete	0.89	5278	1-E	20210	22.5:1*
1-B	51098	Landscape	0.11	5644.2			
1-C	303591	Roofs	0.89	270803.2			
1-D	194632	Asphalt	0.89	173611.7			
Total	**555238**	---	---	**455337.1**			
3-A	5355	Concrete	0.89	4776.7	3-E	803	32:1*
3-B	4308	Landscape	0.11	475.9			
3-D	22992	Asphalt	0.89	20508.9			
3-Total	**32655**	---	---	**25761.5**			

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet)	Post-project surface type	Runoff factor	Product	DMA name /ID	Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]		[D]	[C]/[D]
4-A	7419	Concrete	0.89	6617.7	4-E	925	37.9:1*
4-B	9418	Landscape	0.11	1040.3			
4-D	30720	Asphalt	0.89	27402.2			
4-Total	**47557**	---	---	**35060.2**			

*Does not meet 2:1 Criteria, Area will drain to Type 'D' BMP.

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
1-E	1-All
3-E	2-All
4-E	3-All

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (ref: Chapter 2.4.4 of the WQMP Guidance Document)? ☐ Y ☒ N

Geotechnical Report

A Geotechnical Report is required by the City of Riverside to confirm present and past site characteristics that may affect the use of Infiltration BMPs, see Appendix 3.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? ☐ Y ☒ N

Infiltration Feasibility

Table D.1 Infiltration Feasibility

Does the project site…	YES	NO
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		X
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		X
If Yes, list affected DMAs:		
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?		X
If Yes, list affected DMAs:		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?		X
If Yes, list affected DMAs:		
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		X
If Yes, list affected DMAs:		
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?		X
Describe here:		

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D.2 Harvest and Use Assessment

The following conditions apply*:*

☐ Reclaimed water will be used for the non-potable water demands for the project.

☐ Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verified with the City of Riverside).

☐ The Design Capture Volume will be addressed using Infiltration Only BMPs. (Harvest and Use BMPs are still encouraged, but are not required as the Design Capture Volume will be infiltrated or evapotranspired).

☒ None of the above.

Harvest and Use BMPs need not be assessed for the site.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

For the project, the following applies:

☐ LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4

☐ A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5.

☒ None of the above.

D.4 Feasibility Assessment Summaries

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
1-A	☒	☐	☐	☐	☐
1-B	☒	☐	☐	☐	☐
1-C	☒	☐	☐	☐	☐
1-D	☒	☐	☐	☐	☐
1-E	☒	☐	☐	☐	☐
2-B	☒	☐	☐	☐	☐

D.5 LID BMP Sizing

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*DMA 1*		
	[A]		[B]	[C]	[A] x [C]			
1-A	5917	Concrete	*1*	*0.89*	5278	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
1-B	51098	Landscape	*0.1*	*0.11*	5644.2			
1-C	303591	Roofs	*1*	*0.89*	270803.2			
1-D	194632	Asphalt	*1*	*0.89*	173611.7			
1-E	20210	Landscaped Infiltration Basin	*0.1*	*0.11*	*2232.4*			
	$A_T = \Sigma[A]$				$\Sigma = [D]$	[E]	$[F] = \frac{[D]x[E]}{12}$	[G]
	575448				457569.5	0.65	24785	101050

[B], [C] are obtained from Section 2.3.1 of the WQMP Guidance Document
[E] is obtained from Exhibit A of the WQMP Guidance Document
[G] is obtained from LID BMP design procedure sheet, placed in Appendix 6

Table D.4 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*DMA 2*		
	[A]		[B]	[C]	[A] x [C]			
2-B	*11745*	Natural Soil (C)	*0.3*	*0.23*	*2644.6*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
	$A_T = \Sigma[A]$				$\Sigma = [D]$	[E]	$[F] = \frac{[D]x[E]}{12}$	[G]
	11745				2644.5	0.65	143.2	2500

[B], [C] are obtained from Section 2.3.1 of the WQMP Guidance Document
[E] is obtained from Exhibit A of the WQMP Guidance Document
[G] is obtained from LID BMP design procedure sheet, placed in Appendix 6

Table D.5 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*DMA 3*		
	[A]		[B]	[C]	[A] x [C]			
3-A	5355	Concrete	*1*	*0.89*	4776.7	*Design Storm Depth (in)*	*Design Capture Volume,* $\mathbf{V_{BMP}}$ *(cubic feet)*	*Proposed Volume on Plans (cubic feet)*
3-B	4308	Landscape	*0.1*	*0.11*	475.9			
3-D	22992	Asphalt	*1*	*0.89*	20508.9			
3-E	803	Infiltration Trench	*0.1*	*0.11*	*88.7*			
	$A_T = \Sigma[A]$				$\Sigma = [D]$	[E]	$[F] = \frac{[D]x[E]}{12}$	[G]
	33458				25850.2	0.65	1400.2	1767

[B], [C] are obtained from Section 2.3.1 of the WQMP Guidance Document
[E] is obtained from Exhibit A of the WQMP Guidance Document
[G] is obtained from LID BMP design procedure sheet, placed in Appendix 6

Table D.6 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*DMA 4*		
	[A]		[B]	[C]	[A] x [C]			
4-A	7419	Concrete	*1*	*0.89*	6617.7	*Design Storm Depth (in)*	*Design Capture Volume,* $\mathbf{V_{BMP}}$ *(cubic feet)*	*Proposed Volume on Plans (cubic feet)*
4-B	9418	Landscape	*0.1*	*0.11*	1040.3			
4-D	30720	Asphalt	*1*	*0.89*	27402.2			
4-E	925	Infiltration Trench	*0.1*	*0.11*	*102.2*			
	$A_T = \Sigma[A]$				$\Sigma = [D]$	[E]	$[F] = \frac{[D]x[E]}{12}$	[G]
	48482				35162.4	0.65	1904.6	2035

[B], [C] are obtained from Section 2.3.1 of the WQMP Guidance Document
[E] is obtained from Exhibit A of the WQMP Guidance Document
[G] is obtained from LID BMP design procedure sheet, placed in Appendix 6

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to confirmation of LID waiver approval by the Regional Board). For the project, the following applies:

☒ LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- *Or* -

☐ The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Regional Board and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

The project does not create a Hydrologic Condition of Concern, meeting the criteria for HCOC Exemption as shown below:

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermittee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

HCOC EXEMPTION 2: The volume and time of concentration[1] of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

Results included in Table F.1 below and hydrologic analysis included in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration	22.5	13	-42.2
Flow (CFS)	6.14	16.5	168.7
Volume (Cubic Feet)	12044	18728*	55.5

[1] Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

*Post-condition volume is less than the design capture volume of the infiltration basin.

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HCOC EXEMPTION 3: All downstream conveyance channels that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on Hydromodification Sensitivity Maps.

Does the project qualify for this HCOC Exemption? ☒ Y ☐ N

F.2 HCOC Mitigation

As an alternative to the HCOC Exemption Criteria above, HCOC criteria is considered mitigated if the project meets one of the following conditions, as indicated:

☐ a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.

☐ b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.

☐ c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

☒ d. None of the above.

Note: The HCOC mitigation is not applicable due to the project meeting the HCOC exemption criteria.

Section G: Source Control BMPs

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
D2. Landscape/ Outdoor Pesticide Use	-Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. -Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. Consider using pest-resistant plants, especially adjacent to hardscape.	-Maintain landscaping using minimum or no pesticides. See applicable operational BMPs in "What you should know for Landscape and Gardening" at http://rcflood.org/stormwater
G. Refuse areas	-Refuse area shall have a sign posted stating "Do not dump hazardous materials here" or similar.	- Sweep refuse area regularly to prevent accumulation of litter and debris.
M. Loading Docks	-Loading area shall have a roof overhang or door skirts (cowling) at each bay that enclose the end of the trailer.	-Move loaded and unloaded items indoors as soon as possible.
P. Plazas, sidewalks, and parking lots.		-Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect wash water containing any cleaning agent or degreaser and discharge to the sanitary sewer, not to a storm drain.

Section H: Construction Plan Checklist

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Plan Sheet Number(s)	Latitude / Longitude
1-E	Infiltration Basin		34°01’01.0”N 117°21’13.0”W
2-B	Unlined Channel		34° 1'04.5"N 117°21'24.0"W
3-E	Infiltration Trench		34° 1'06"N 117°21'22.0"W
4-E	Infiltration Trench		34° 1'06"N 117°21'13.0"W

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Section I: Operation, Maintenance and Funding

As required by the City of Riverside, the following Operation, Maintenance and Funding details are provided as summarized:

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred.
3. An outline of general maintenance requirements for the Stormwater BMPs selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance.

See Appendix 9 for a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on site, and an agreement assigning responsibility for maintenance and providing for inspections and certification.

Maintenance Mechanism: **Covenant & Agreement**

Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

☐ Y ☒ N **Property Owner is Responsible**

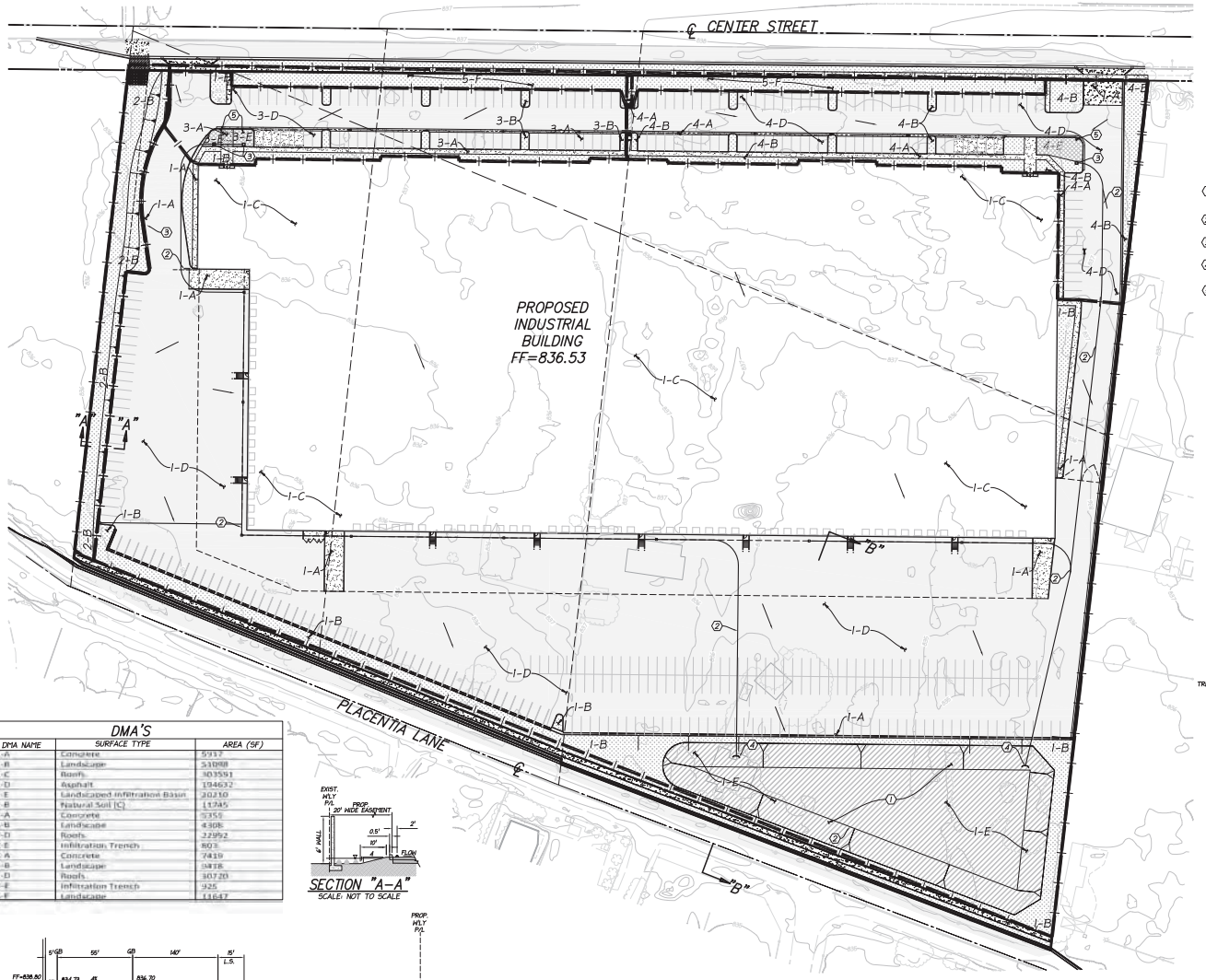
Operation and Maintenance Plan and Maintenance Mechanism are included in Appendix 9. Educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP are included in Appendix 10.

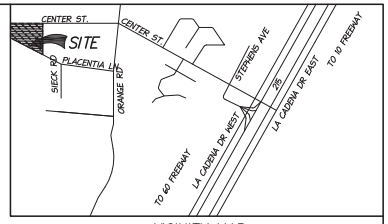
Planning Commission - Exhibit 1 - Development Review Committee Staff Report
Development Review Committee - Exhibit 7 - CEQA Documents
Attachment 3 - City Planning Commission Report and Exhibits - April 05, 2018

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

WQMP EXHIBIT
CITY OF RIVERSIDE
JULY 2015





VICINITY MAP
THOMAS GUIDE - PAGE 645, J-6 (2005 EDITION)
SECTION 12, TOWNSHIP 2 SOUTH RANGE 5 WEST
NOT TO SCALE

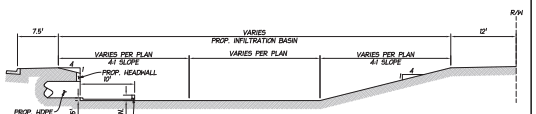
BMP LEGEND

1. PROPOSED INFILTRATION TRENCH PER DETAIL HEREON
2. PROPOSED HDPE STORM DRAIN PIPE
3. PROPOSED CATCH BASIN
4. PROPOSED HEADWALL AND FOREBAY
5. PROPOSED INFILTRATION TRENCH PER DETAIL HEREON

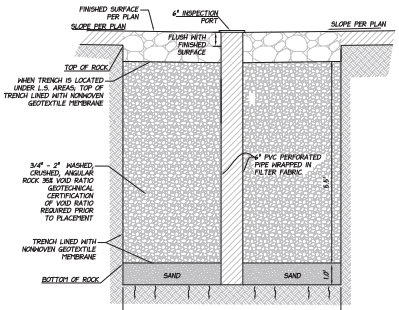
DIRECTION OF FLOW
PROPOSED DRAINAGE MANAGEMENT AREA BOUNDARY
PROPOSED LANDSCAPED
CONCRETE SIDEWALK
PROPOSED AC PAVING

LEGEND

EXISTING PROPERTY LINE
PROPOSED RIGHT OF WAY
EXISTING RIGHT OF WAY
EXISTING CENTERLINE
PROPOSED CURB
EXISTING CURB
PROPOSED SIDEWALK
EXISTING SIDEWALK
EXISTING DIRT ROAD
PROPOSED PARKING STRIPE
EXISTING EASEMENT
EXISTING CONTOUR MAJOR
EXISTING CONTOUR MINOR
EXISTING FENCE
EXISTING BUILDING
EXISTING CONCRETE
EXISTING EDGE OF PAVEMENT
PROPOSED EDGE OF PAVEMENT
EXISTING CONTOUR ELEVATION
EXISTING SPOT ELEVATION
EP EDGE OF PAVEMENT
R/W RIGHT OF WAY
P/L PROPERTY LINE
EXIST. EXISTING
PROP. PROPOSED
S.F. SQUARE FEET
D/W DRIVEWAY
S/W SIDEWALK



DETAIL "A"
SCALE: 1"=10'



TYPICAL INFILTRATION TRENCH
NTS (PVT)

DMA'S		
DMA NAME	SURFACE TYPE	AREA (SF)
1-A	Concrete	5937
1-B	Landscape	51088
1-C	Roofs	303591
1-D	Asphalt	194632
1-E	Landscaped Infiltration Basin	20210
2-B	Natural Soil (C)	11745
3-A	Concrete	5355
3-B	Landscape	4308
3-D	Roofs	22952
3-E	Infiltration Trench	803
4-A	Concrete	7419
4-B	Landscape	9418
4-D	Roofs	30720
4-E	Infiltration Trench	925
4-F	Landscape	11647

SECTION "A-A"
SCALE: NOT TO SCALE

SECTION "B-B"
SCALE: NOT TO SCALE

GRAPHIC SCALE
SCALE: 1" = 50'

PREPARED BY:

PSOMAS
1500 IOWA AVENUE, SUITE 210
RIVERSIDE, CA 92507
(951) 787-8421 WWW.PSOMAS.COM

CITY OF RIVERSIDE
WQMP SITE PLAN
CENTER STREET

CENTER ST. INDUSTRIAL BLOCK
POST-DEVELOPMENT HYDROLOGY KEY MAP
CITY OF RIVERSIDE

GRAPHIC SCALE
SCALE: 1" = 150
150 75 0' 150 300

LEGEND
DRAINAGE AREA DESIGNATION
DIRECTION OF FLOW

PREPARED BY:
P S O M A S
1500 IOWA AVENUE, SUITE 210
RIVERSIDE, CA 92507
(951) 787-8421 WWW.PSOMAS.COM

CITY OF RIVERSIDE
CENTER ST. INDUSTRIAL BLOCK
POST-DEVELOPMENT
HYDROLOGY KEY MAP

CENTER ST. INDUSTRIAL BLOCK
PRE-DEVELOPMENT HYDROLOGY KEY MAP
CITY OF RIVERSIDE

150 75 0' 150 300

GRAPHIC SCALE
SCALE: 1" = 150

LEGEND

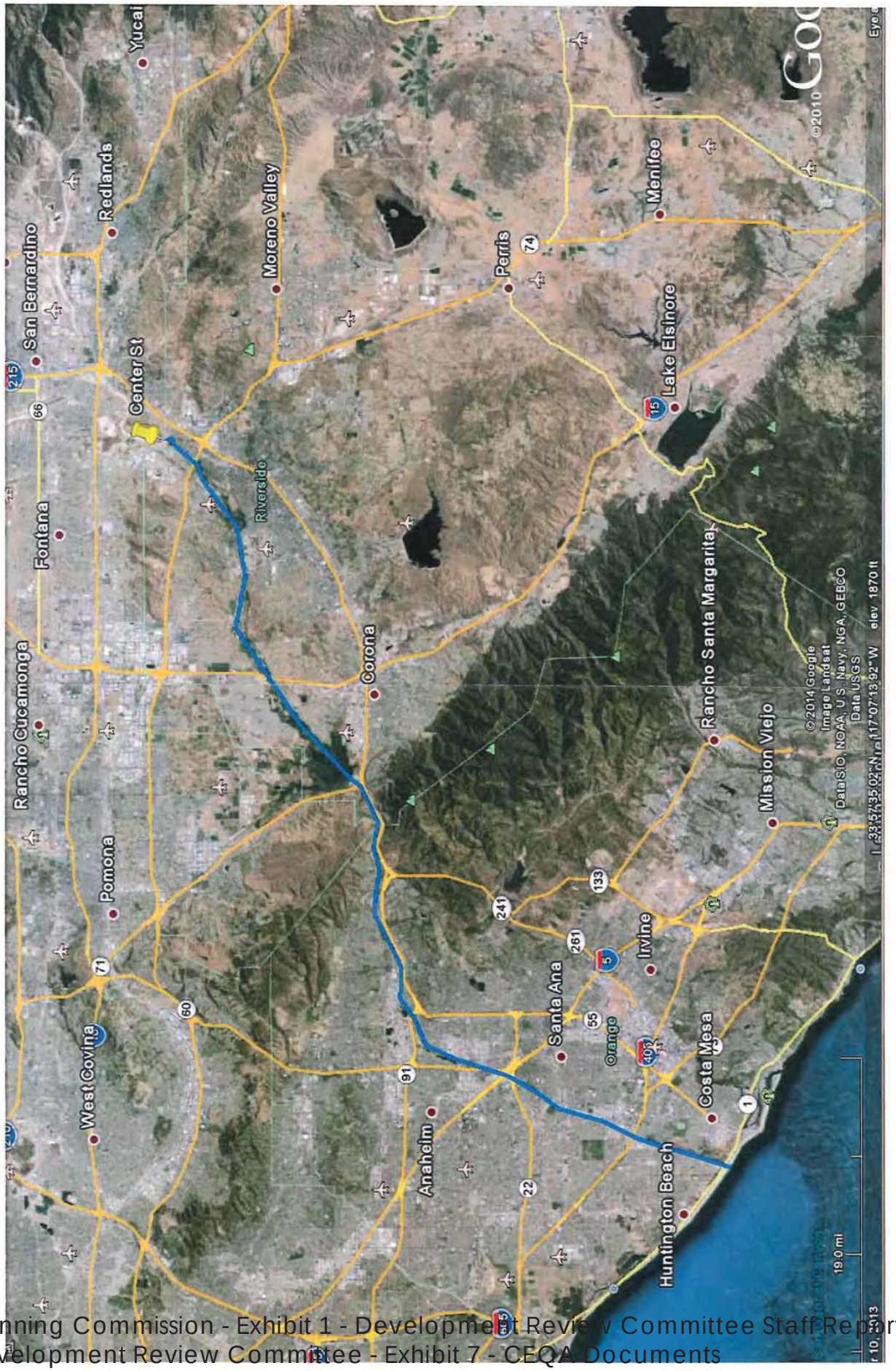
DRAINAGE AREA DESIGNATION

DIRECTION OF FLOW

PREPARED BY:
PSOMAS
1500 IOWA AVENUE, SUITE 210
RIVERSIDE, CA 92507
(951) 787-8421 WWW.PSOMAS.COM

CITY OF RIVERSIDE
CENTER ST. INDUSTRIAL BLOCK
PRE-DEVELOPMENT
HYDROLOGY KEY MAP

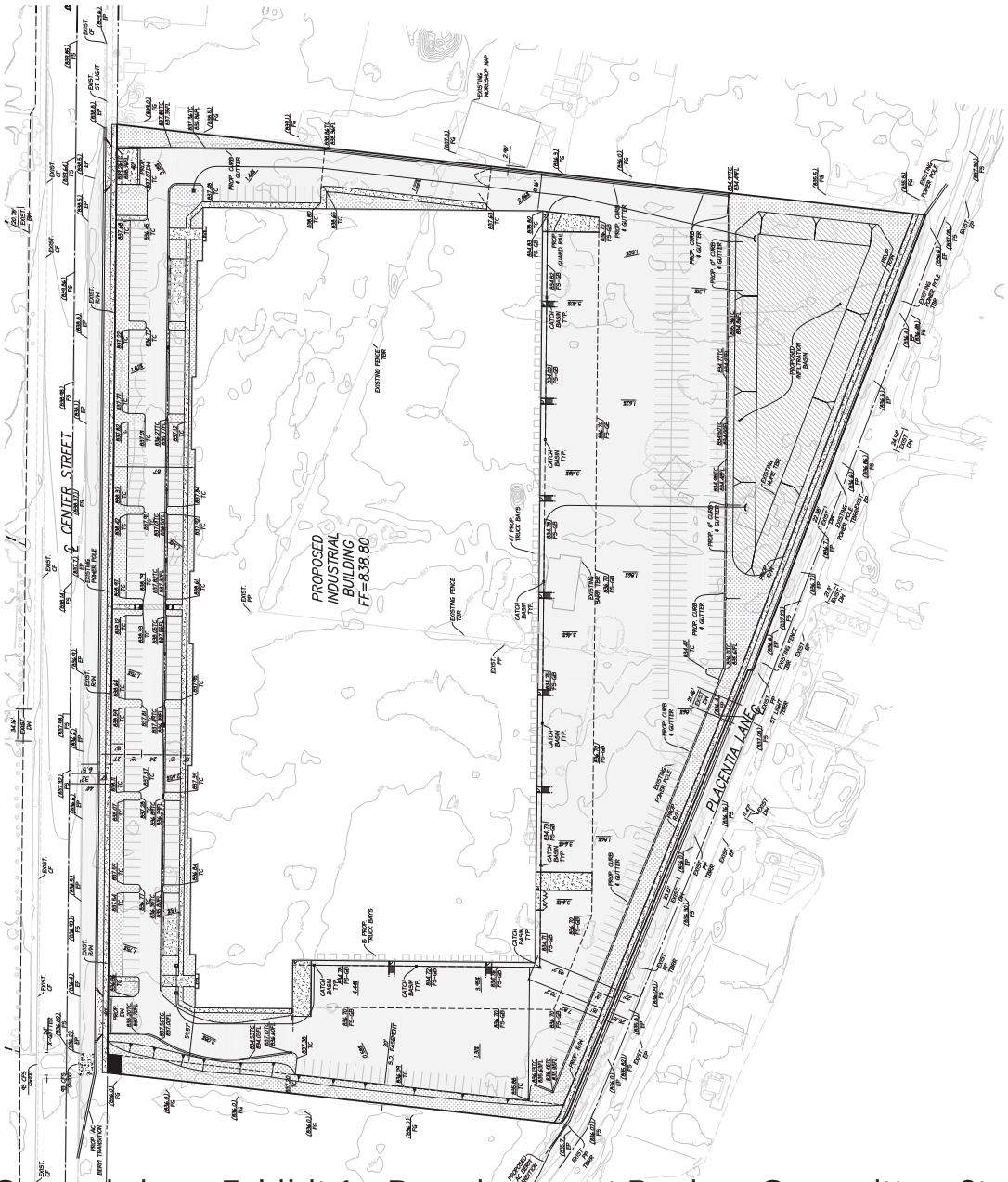
Drawing: G:\491.001\Drawings\Prelim\Hydrology\491001-PRE_DEV_HYD.dwg Plotted By: andrew.woodard Layout: 11x17 L Last Saved: Tue Nov 25, 2014 - 11:19am Last Plotted: Thu Dec 04, 2014 - 10:40am


Yucaipa
Redlands
San Bernardino
Moreno Valley
Perris
Menifee
Center St
Lake Elsinore
Riverside
Fontana
Rancho Cucamonga
Corona
Rancho Santa Margarita
Mission Viejo
Pomona
Irvine
Santa Ana
West Covina
Orange
Costa Mesa
Anaheim
Huntington Beach
215
66
74
15
71
60
91
241
133
261
5
55
405
1
22
19.0 mi
©2014 Google
Image Landsat
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Data USGS
elev 1870 ft

Appendix 2: Construction Plans

Grading and Drainage Plans

Planning Commission - Exhibit 1 - Development Review Committee Staff Report
Development Review Committee - Exhibit 7 - CEQA Documents
Attachment 3 - City Planning Commission Report and Exhibits - April 05, 2018



Planning Commission - Exhibit 1 - Development Review Committee Staff Report
Development Review Committee - Exhibit 7 - CEQA Documents

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

N/A

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

N/A

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

Planning Commission - Exhibit 1 - Development Review Committee Staff Report
Development Review Committee - Exhibit 7 - CEQA Documents
Attachment 3 - City Planning Commission Report and Exhibits - April 05, 2018

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: Psomas | Date: 7/9/2015
Designed by: AW | Case No: P14-1033
Company Project Number/Name: 491.001

BMP Identification

BMP NAME / ID: 1-E

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.65 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
1-A	*5917*	*Concrete or Asphalt*	*1*	*0.89*	*5278*			
1-B	*51098*	*Ornamental Landscaping*	*0.1*	*0.11*	*5644.2*			
1-C	*303591*	*Roofs*	*1*	*0.89*	*270803.2*			
1-D	*194632*	*Concrete or Asphalt*	*1*	*0.89*	*173611.7*			
1-E	*20210*	*Ornamental Landscaping*	*0.1*	*0.11*	*2232.4*			
	575448	***Total***			**457569.5**	**0.65**	***24785***	***101050***

Notes:

Planning Commission - Exhibit 1 - Development Review Committee Staff Report
Development Review Committee - Exhibit 7 - CEQA Documents
Attachment 3 - City Planning Commission Report and Exhibits - April 05, 2018

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	Psomas	Date	7/9/2015
Designed by	AW	Case No	P14-1033
Company Project Number/Name	491.001		

BMP Identification

BMP NAME / ID: 2-E

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.65 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
2-B	*11745*	*Natural (C Soil)*	*0.3*	*0.23*	*2644.6*			
	11745	***Total***			**2644.6**	**0.65**	***143.2***	***2500***

Notes:

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	Psomas	Date	7/9/2015
Designed by	AW	Case No	P14-1033
Company Project Number/Name	491.001		

BMP Identification

BMP NAME / ID: 3-E

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.65 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
3-A	*5355*	*Concrete or Asphalt*	*1*	*0.89*	*4776.7*			
3-B	*4308*	*Ornamental Landscaping*	*0.1*	*0.11*	*475.9*			
3-D	*22992*	*Concrete or Asphalt*	*1*	*0.89*	*20508.9*			
3-E	*803*	*Ornamental Landscaping*	*0.1*	*0.11*	*88.7*			
	33458	***Total***			**25850.2**	**0.65**	***1400.2***	***1767***

Notes:

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	Psomas	Date	7/9/2015
Designed by	AW	Case No	P14-1033
Company Project Number/Name	491.001		

BMP Identification

BMP NAME / ID: 4-E

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.65 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
4-A	*7419*	*Concrete or Asphalt*	*1*	*0.89*	*6617.7*			
4-B	*9418*	*Ornamental Landscaping*	*0.1*	*0.11*	*1040.3*			
4-D	*30720*	*Concrete or Asphalt*	*1*	*0.89*	*27402.2*			
4-E	*925*	*Ornamental Landscaping*	*0.1*	*0.11*	*102.2*			
	48482	*Total*			*35162.4*	*0.65*	*1904.6*	*2035*

Notes:

Infiltration Basin - Design Procedure (Rev. 03-2012)	BMP ID 1-E	Legend:	Required Entries / Calculated Cells

Company Name:	Psomas	Date:	7/10/2015
Designed by:	ACW	County/City Case No.:	P14-1033

Design Volume

a) Tributary area (BMP subarea)	A_T =	13.2	acres
b) Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	24,709	ft^3

Maximum Depth

a) Infiltration rate	I =	10	in/hr
b) Factor of Safety (See Table 1, Appendix A: "Infiltration Testing" from this BMP Handbook)	FS =	12	
c) Calculate D_1 $D_1 = \frac{I\ (in/hr) \times 72\ hrs}{12\ (in/ft) \times FS}$	D_1 =	5.0	ft
d) Enter the depth of freeboard (at least 1 ft)		1	ft
e) Enter depth to historic high ground water (measured from **top** of basin)		31	ft
f) Enter depth to top of bedrock or impermeable layer (measured from **top** of basin)		100	ft
g) D_2 is the smaller of:			
Depth to groundwater - (10 ft + freeboard) and Depth to impermeable layer - (5 ft + freeboard)	D_2 =	20.0	ft
h) D_{MAX} is the smaller value of D_1 and D_2 but shall not exceed 5 feet	D_{MAX} =	5.0	ft

Basin Geometry

a) Basin side slopes (no steeper than 4:1)	z =	6	:1
b) Proposed basin depth (excluding freeboard)	d_B =	5	ft
c) Minimum bottom surface area of basin ($A_S = V_{BMP}/d_B$)	A_S =	4942	ft^2
d) Proposed Design Surface Area	A_D =	20210	ft^2

Forebay

a) Forebay volume (minimum 0.5% V_{BMP})	Volume =	124	ft^3
b) Forebay depth (height of berm/splashwall. 1 foot min.)	Depth =	1	ft
c) Forebay surface area (minimum)	Area =	124	ft^2
d) Full height notch-type weir	Width (W) =	10.0	in

Notes:

Infiltration Trench - Design Procedure	BMP ID 3-E	Legend:	Required Entries / Calculated Cells

Company Name:	Psomas	Date:	7/9/2015
Designed by:	AW	County/City Case No.:	P14-1033

Design Volume

Enter the area tributary to this feature, Max = 10 acres	A_t=	1	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	1,400	ft^3

Calculate Maximum Depth of the Reservoir Layer

Enter Infiltration rate	I =	10.0	in/hr
Enter Factor of Safety, FS (unitless)	FS =	5	
Obtain from Table 1, Appendix A: "Infiltration Testing" of this BMP Handbook			
	n =	40	%
Calculate D_1. $D_1 = \frac{I\ (in/hr) \times 72\ hrs}{12\ (in/ft) \times (n/100) \times FS}$	D_1 =	30.00	ft
Enter depth to historic high groundwater mark (measured from finished grade)		31	ft
Enter depth to top of bedrock or impermeable layer (measured from finished grade)		100	ft
D_2 is the smaller of: Depth to groundwater - 11 ft; & Depth to impermeable layer - 6 ft	D_2 =	20.0	ft
D_{MAX} is the smaller value of D_1 and D_2, must be less than or equal to 8 feet.	D_{MAX} =	8.0	ft

Trench Sizing

Enter proposed reservoir layer depth D_R, must be ≤ D_{MAX}	D_R =	5.50	ft
Calculate the design depth of water, d_W			
Design $d_W = (D_R) \times (n/100)$	Design d_W=	2.20	ft
Minimum Surface Area, A_S $A_S = \frac{V_{BMP}}{d_W}$	A_S =	636	ft^2
Proposed Design Surface Area	A_D =	803	ft^2
Minimum Width = D_R + 1 foot pea gravel		6.50	ft
Sediment Control Provided? (Use pulldown)		Yes	
Geotechnical report attached? (Use pulldown)		Yes	

If the trench has been designed correctly, there should be no error messages on the spreadsheet.

Planning Commission - Exhibit 1 - Development Review Committee Staff Report
Development Review Committee - Exhibit 7 - CEQA Documents
Attachment 3 - City Planning Commission Report and Exhibits - April 05, 2018

Infiltration Trench - Design Procedure	BMP ID 4-E	Legend:	Required Entries / Calculated Cells

Company Name:	Psomas	Date:	7/9/2015
Designed by:	AW	County/City Case No.:	P14-1033

Design Volume

Enter the area tributary to this feature, Max = 10 acres	A_t=	1	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	1,905	ft^3

Calculate Maximium Depth of the Reservoir Layer

Enter Infiltration rate	I =	10.0	in/hr
Enter Factor of Safety, FS (unitless)	FS =	5	
Obtain from Table 1, Appendix A: "Infiltration Testing" of this BMP Handbook			
	n =	40	%
Calculate D_1. $D_1 = \frac{I\ (in/hr) \times 72\ hrs}{12\ (in/ft) \times (n/100) \times FS}$	D_1 =	30.00	ft
Enter depth to historic high groundwater mark (measured from finished grade)		31	ft
Enter depth to top of bedrock or impermeable layer (measured from finished grade)		100	ft
D_2 is the smaller of:			
Depth to groundwater - 11 ft; & Depth to impermeable layer - 6 ft	D_2 =	20.0	ft
D_{MAX} is the smaller value of D_1 and D_2, must be less than or equal to 8 feet.	D_{MAX} =	8.0	ft

Trench Sizing

Enter proposed reservoir layer depth D_R, must be ≤ D_{MAX}	D_R =	5.50	ft
Calculate the design depth of water, d_W			
Design $d_W = (D_R) \times (n/100)$	Design d_W=	2.20	ft
Minimum Surface Area, A_S $A_S = \frac{V_{BMP}}{d_W}$	A_S =	866	ft^2
Proposed Design Surface Area	A_D =	925	ft^2
Minimum Width = D_R + 1 foot pea gravel		6.50	ft
Sediment Control Provided? (Use pulldown)			
Geotechnical report attached? (Use pulldown)			

If the trench has been designed correctly, there should be no error messages on the spreadsheet.

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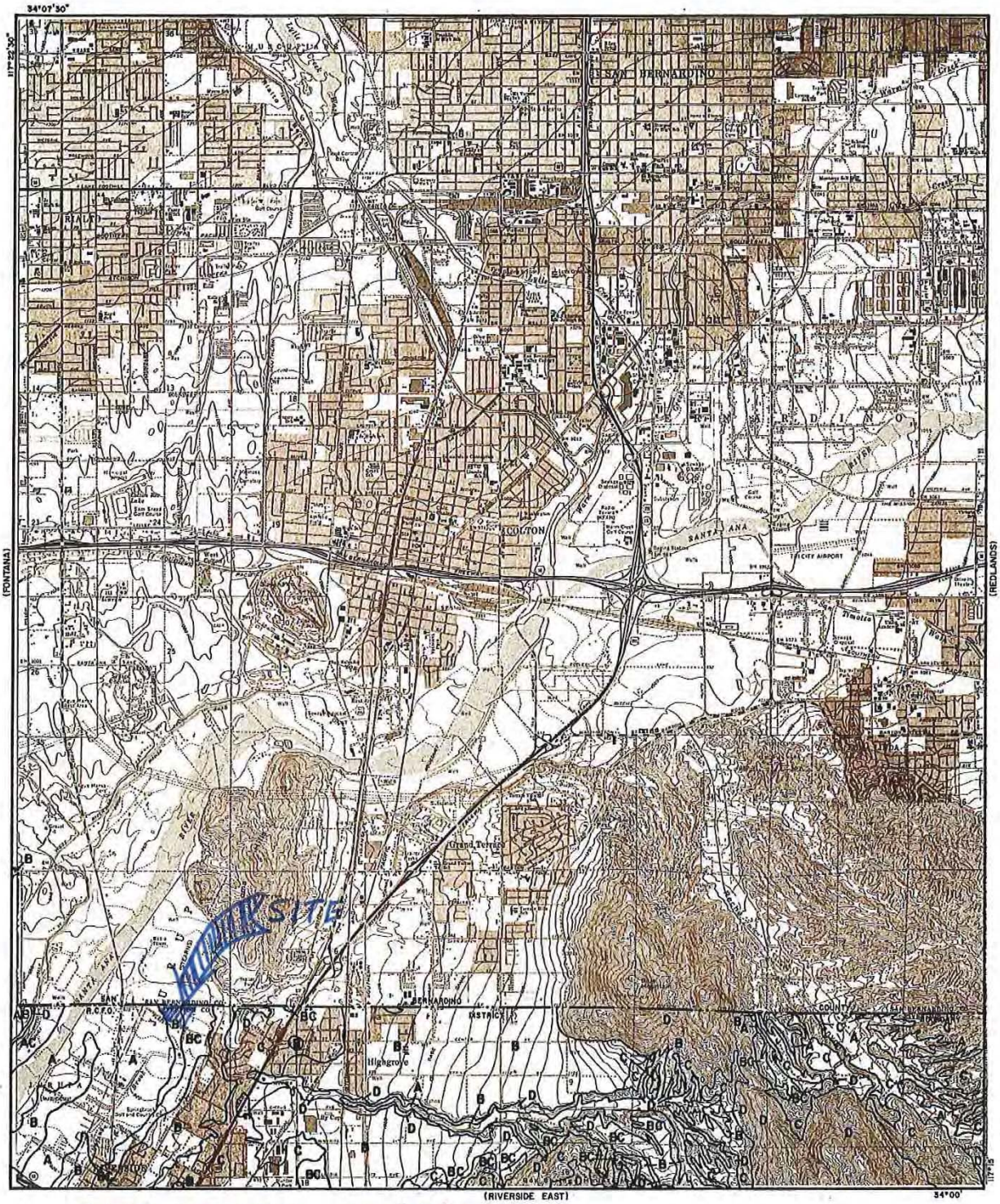
Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern



SITE LOCATED ON "B" SOIL

LEGEND

SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

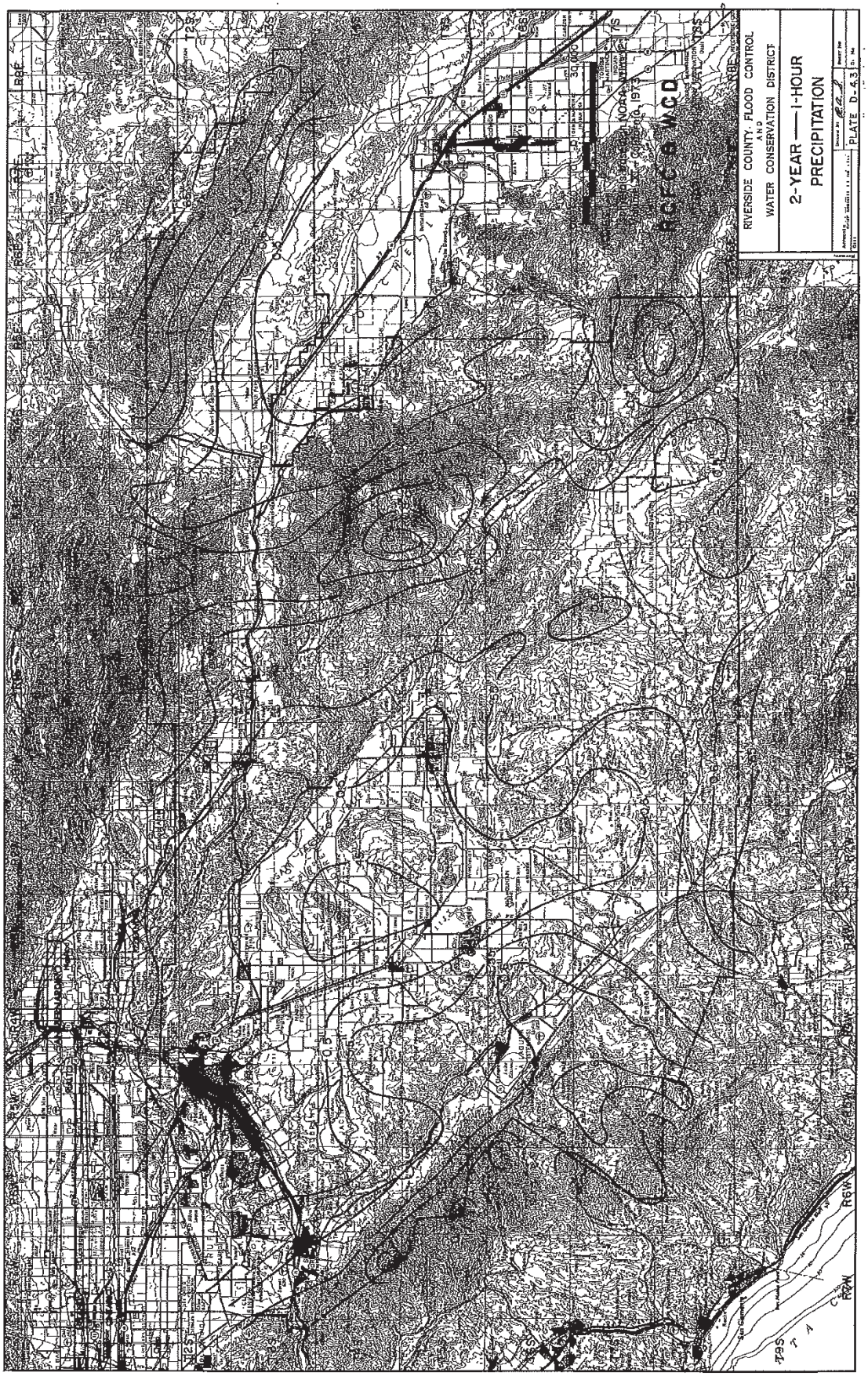
RCFC&WCD

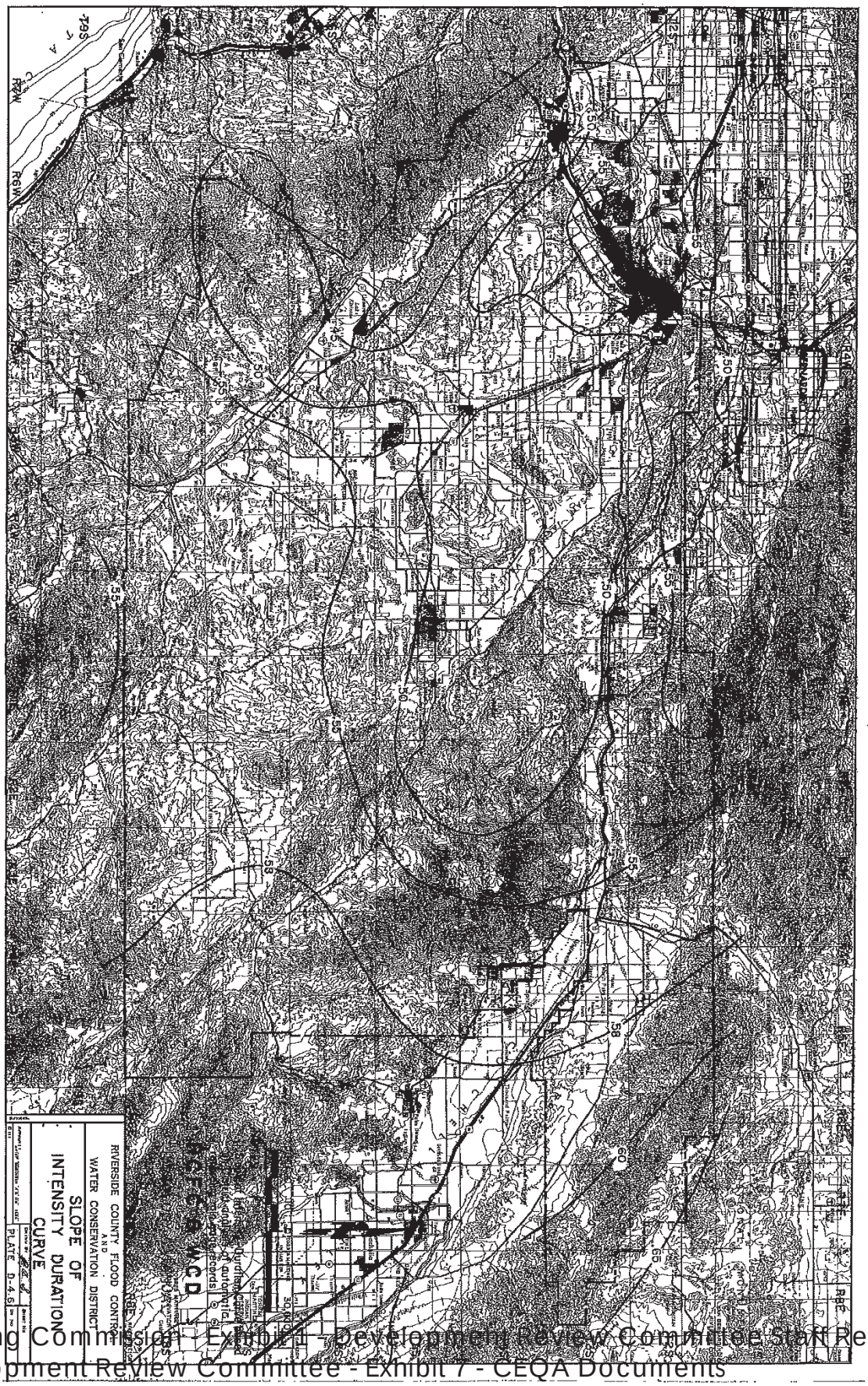
HYDROLOGY MANUAL

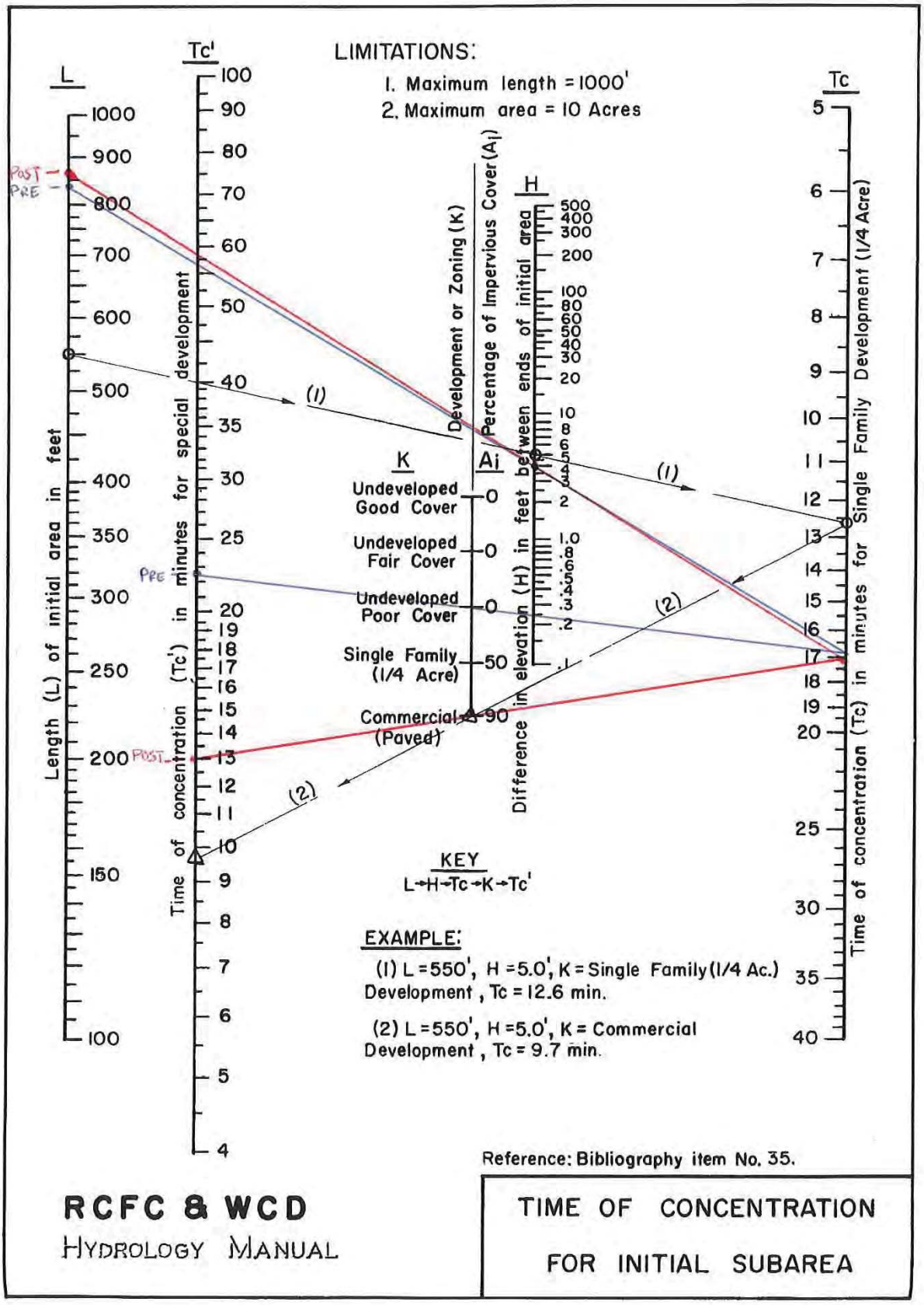
0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR SAN BERNARDINO-SOUTH

PLATE C-1.04


RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
2-YEAR — 1-HOUR
PRECIPITATION
PLATE D-4.3
RCFC & WCD


RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
SLOPE OF INTENSITY DURATION CURVE
PLATE D-4.6
RCFC&WCD


LIMITATIONS:
1. Maximum length = 1000'
2. Maximum area = 10 Acres
L
Tc'
Tc
H
K
Ai
Length (L) of initial area in feet
Time of concentration (Tc') in minutes for special development
Development or Zoning (K)
Percentage of Impervious Cover (Ai)
Difference in elevation (H) in feet between ends of initial area
Time of concentration (Tc) in minutes for Single Family Development (1/4 Acre)
Undeveloped Good Cover
Undeveloped Fair Cover
Undeveloped Poor Cover
Single Family (1/4 Acre)
Commercial (Paved)
POST
PRE
(1)
(2)
KEY
L→H→Tc→K→Tc'
EXAMPLE:
(1) L = 550', H = 5.0', K = Single Family (1/4 Ac.) Development, Tc = 12.6 min.
(2) L = 550', H = 5.0', K = Commercial Development, Tc = 9.7 min.
Reference: Bibliography item No. 35.
RCFC & WCD
HYDROLOGY MANUAL
TIME OF CONCENTRATION
FOR INITIAL SUBAREA
PLATE D-3

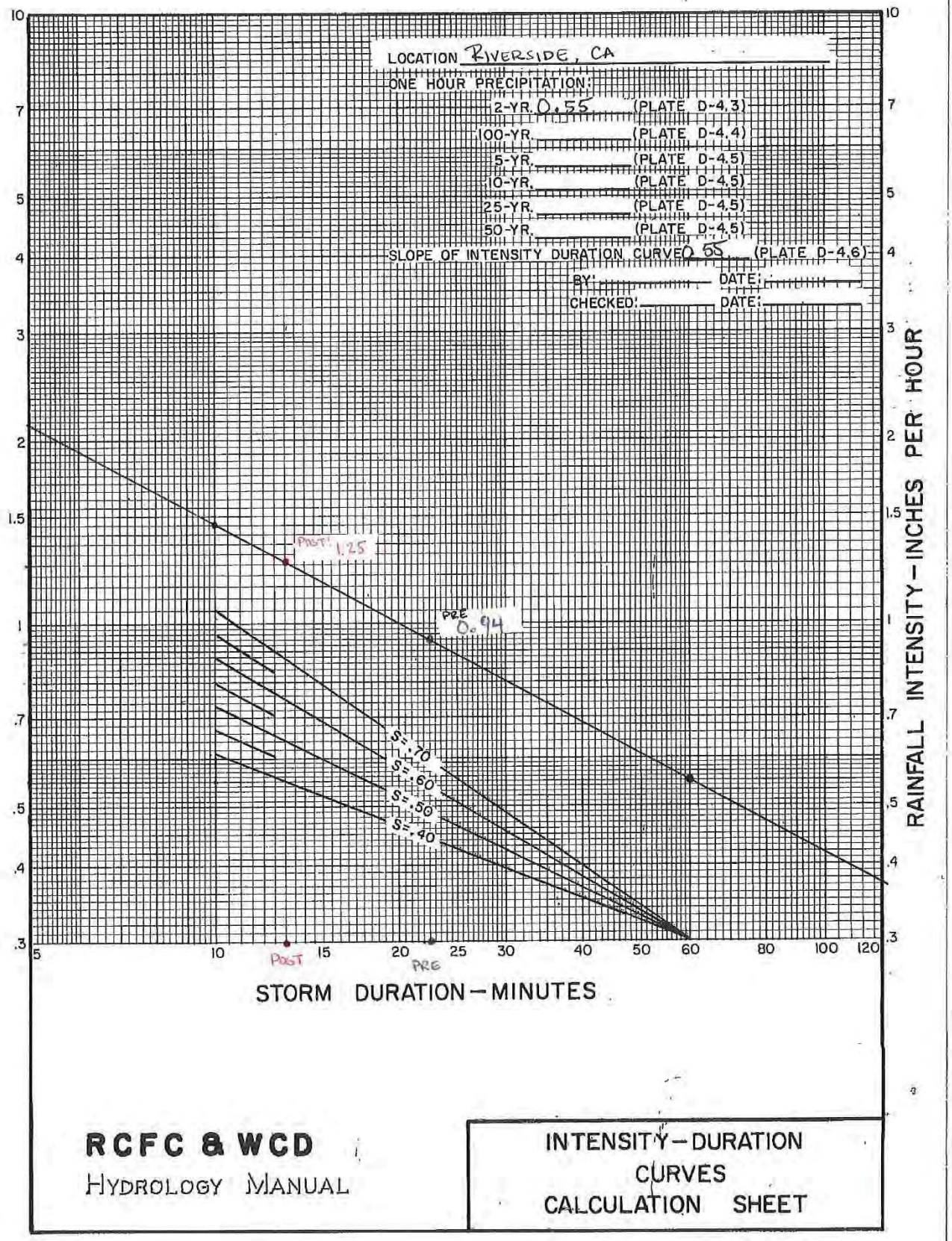
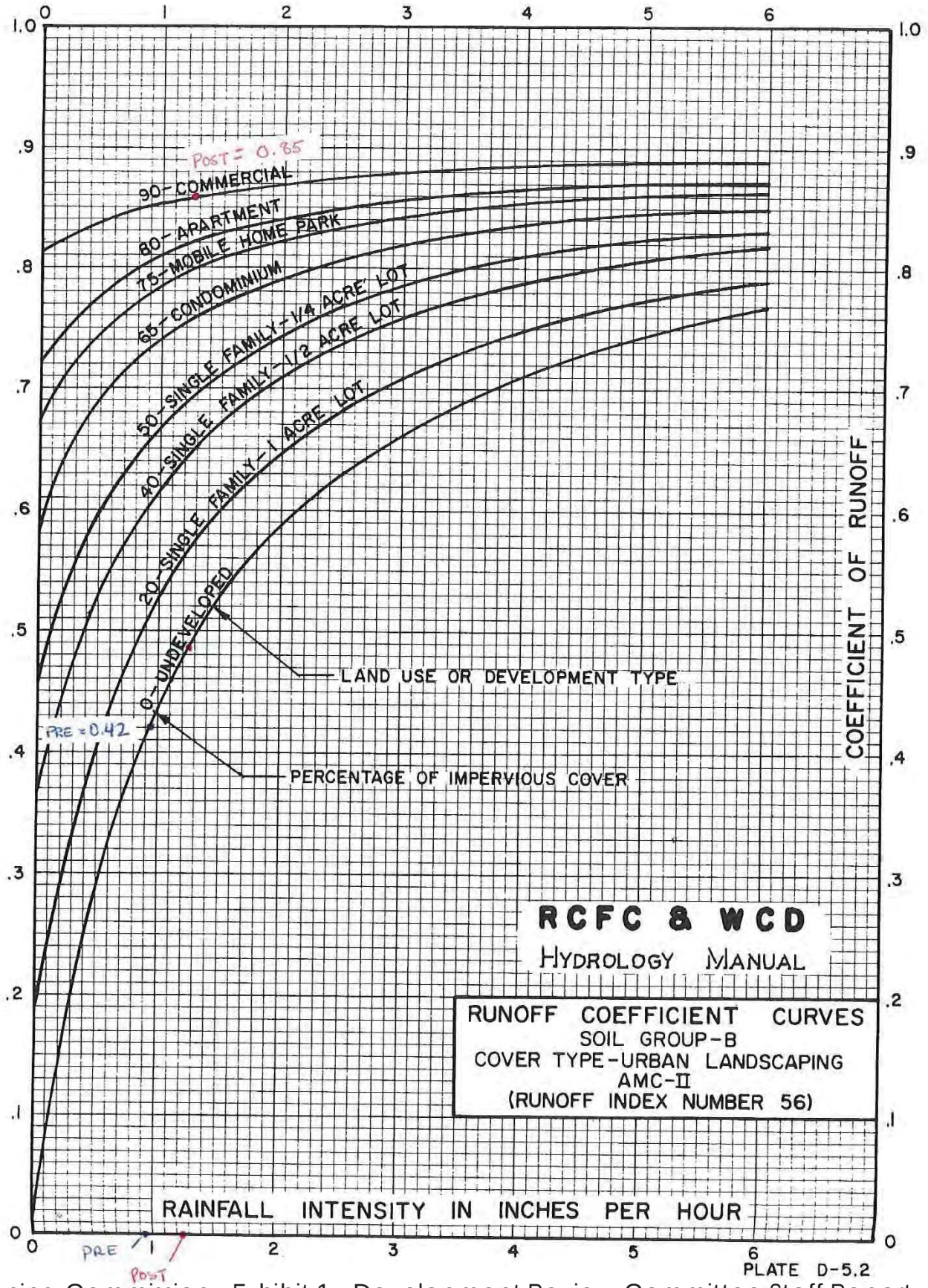

LOCATION RIVERSIDE, CA
ONE HOUR PRECIPITATION:
2-YR. 0.55 (PLATE D-4.3)
100-YR. (PLATE D-4.4)
5-YR. (PLATE D-4.5)
10-YR. (PLATE D-4.5)
25-YR. (PLATE D-4.5)
50-YR. (PLATE D-4.5)
SLOPE OF INTENSITY DURATION CURVE 0.55 (PLATE D-4.6)
BY: DATE:
CHECKED: DATE:
POST 1.25
PRE 0.94
S=.70
S=.60
S=.50
S=.40
POST
PRE
STORM DURATION — MINUTES
RAINFALL INTENSITY — INCHES PER HOUR
RCFC & WCD
HYDROLOGY MANUAL
INTENSITY — DURATION CURVES CALCULATION SHEET

PLATE D-4.7


POST = 0.85
90 - COMMERCIAL
80 - APARTMENT
75 - MOBILE HOME PARK
65 - CONDOMINIUM
50 - SINGLE FAMILY - 1/4 ACRE LOT
40 - SINGLE FAMILY - 1/2 ACRE LOT
20 - SINGLE FAMILY - 1 ACRE LOT
0 - UNDEVELOPED
LAND USE OR DEVELOPMENT TYPE
PRE = 0.42
PERCENTAGE OF IMPERVIOUS COVER
COEFFICIENT OF RUNOFF
RCFC & WCD
HYDROLOGY MANUAL
RUNOFF COEFFICIENT CURVES
SOIL GROUP - B
COVER TYPE - URBAN LANDSCAPING
AMC - II
(RUNOFF INDEX NUMBER 56)
RAINFALL INTENSITY IN INCHES PER HOUR
PRE
POST
PLATE D-5.2

RCFC & WCD HYDROLOGY MANUAL
RATIONAL METHOD CALCULATION FORM

Sheet No. ___ of ___ Sheets

PROJECT _____

FREQUENCY 2yr · 1HR

Calculated by _____ DATE _____

Checked by _____ DATE _____

DRAINAGE AREA	Soil & Development	A Acres	I in/hr.	C	ΔQ CFS	Σ Q CFS	SLOPE	SECTION	V FPS	L FT.	T MIN.	Σ T	REMARKS
PRE	UNDEVELOPED	15.55	0.94	0.42	6.14					840	22.5		
POST	COMMERCIAL	15.55	1.25	0.85	16.52					360	13		

PLATE D-2

WO 454.001

HYDROGRAPH FOR SMALL AREAS

Tc= 22.5

2 Year Pre

Q=C*I*A C= 0.42 I= 0.94 A= 15.55 6.13914

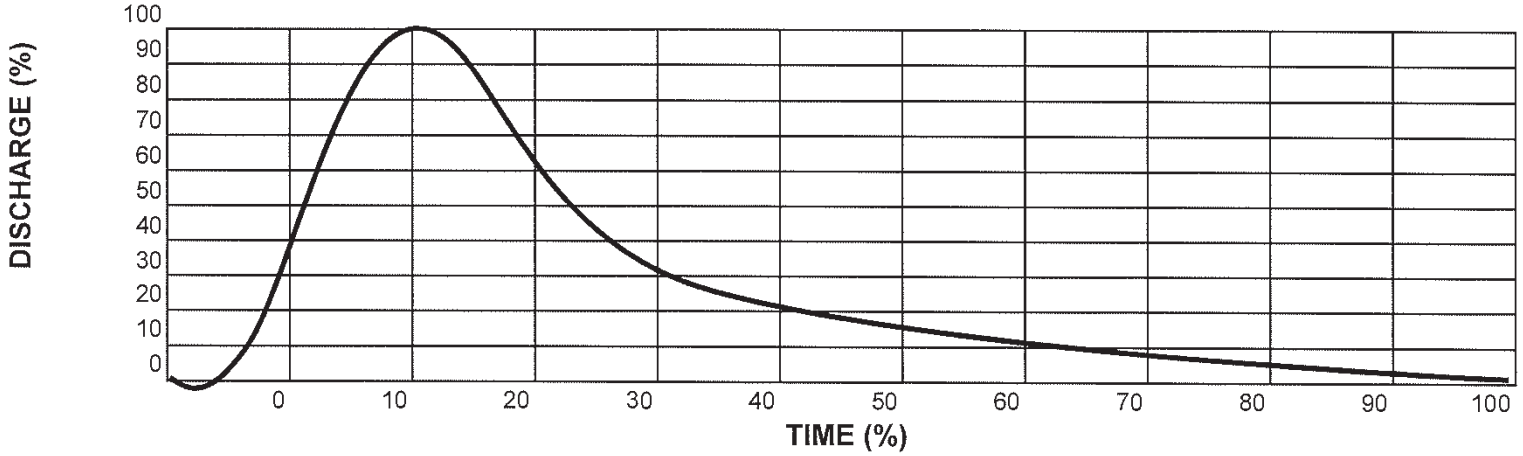
Total Time=Tc*5*60 Tc= 22.5 x 5 x 60 = 6750

Scale Factor= 1 sq. cm = Q/10 x Time/20

0.613914 x 337.5 = 207.196 CF/Sq CM

207.196 x 58.13 = 12044 CF

58.13 is a constant to convert area under the curve to cubic feet



WO 454.001

HYDROGRAPH FOR SMALL AREAS

Tc= 13

2 Year Post

Q=C*I*A C= 0.85 I= 1.25 A= 15.55 16.52188

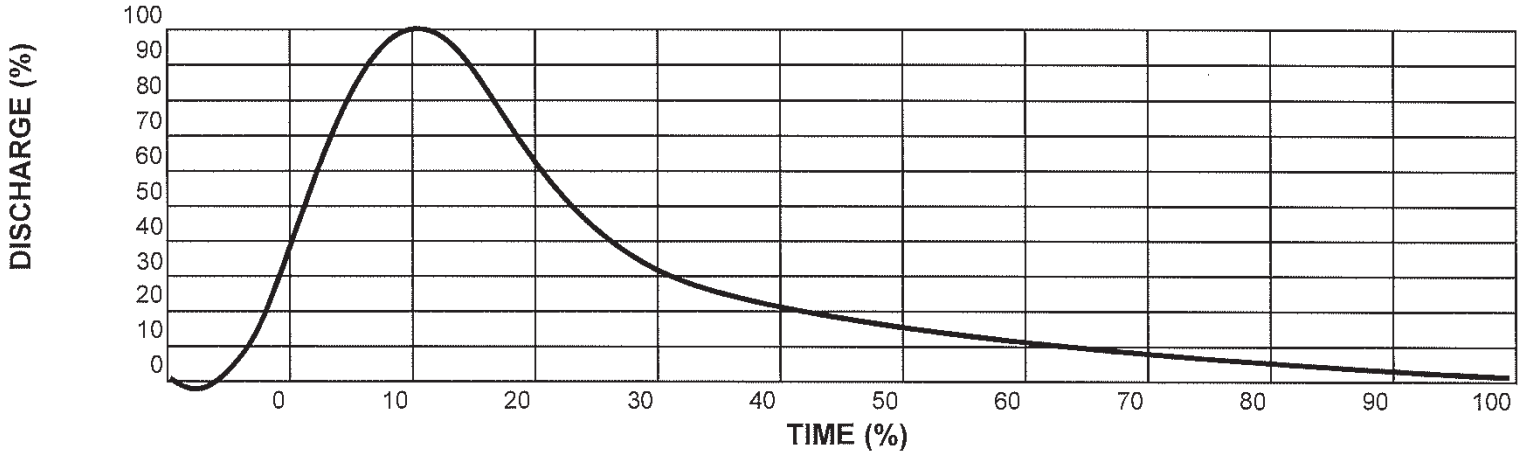
Total Time=Tc*5*60 Tc= 13 x 5 x 60 = 3900

Scale Factor= 1 sq. cm = Q/10 x Time/20

1.652188 x 195 = 322.1766 CF/Sq CM

322.1766 x 58.13 = 18728 CF

58.13 is a constant to convert area under the curve to cubic feet



Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

Educational Materials included with this WQMP are the following:

1. "A citizen's guide to understanding Stormwater" from EPA 833-B-00-002.
2. Stormwater pollution what you should know for "Outdoor Cleaning Activities and Non-point Source Discharges" from CRFC
3. "Tips for a healthy pet and healthier environment" from CRFC.
4. CASQA Handouts

SD-10 Site Design & Landscape Planning

SD-11 Roof Runoff Controls

SD-12 Efficient Irrigation

SD-13 Storm Drain Signage

SC-10 Non-Stormwater Discharges

SC-41 Building and Grounds Maintenance

SC-43 Parking/Storage Area Maintenance

SC-44 Drainage System Maintenance

TC-11 Infiltration Basin

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Center Street Commerce Building

Noise Study

February 2016 (13432)

Prepared for:

Transition Properties, LP
PO Box 1010
Blue Jay, California 92317

Prepared by:

MIG
1500 Iowa Avenue, Suite 110
Riverside, California 92507

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This document is formatted for double-sided printing to conserve natural resources.

Center Street Commerce Building

Noise Study

February 2016

City of Riverside, California

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Construction-related and operational noise impacts were modeled and analyzed for the proposed building located at 3667 Placentia Lane in the City of Riverside, California. This noise impact analysis contains documentation of existing noise levels as well as analysis of the impacts generated by project operation and traffic and analysis of vibration impacts. This report analyzes the project's consistency with applicable federal, State, and local regulations. The results of this report find construction-related and operational noise levels are consistent with applicable regulations.

1.1 Project Description

The project includes the development of a 308,000-square foot building located at 3667 Placentia Lane in the City of Riverside, California. The project includes 382 parking stalls, 62 trailer docks, and 110,591 square feet of landscaping.

1.2 Construction-Related Noise

Temporary noise increases will be greatest during the demolition phase. The model indicates that the use of construction equipment such as excavators, dozers, and concrete saws could expose the use located approximately 421 feet to the south of the center of the project site to a combined noise level of 71.1 dBA $L_{max.}$ Construction equipment could expose the use located 640 feet south, the industrial use located 510 feet east, and the park located 544 feet from the center of the project site to a combined noise level of 67.4 dBA L_{max}, 69.4 dBA L_{max}, and 68.8 dBA L_{max}, respectively. A noise level of 70 dBA is allowable at surrounding industrial uses and a noise level of 65 dBA is allowable at public recreation facilities. Construction activity could result in noise levels in excess of the allowable noise levels at the industrial use to the south and the public recreation use to the south of the project site. With incorporation of the Mitigation Measures N-1 and N-2, described herein, no substantial impacts will occur.

1.3 Operational Noise

The increase in vehicular traffic on area roadways will not result in noise levels exceeding the 65 dBA exterior noise standard established by the City of Colton to the north. The exterior noise levels under the Without and With project scenarios exceed allowable exterior noise levels at the residential uses to the northwest, northeast, and southeast of the project site. However, the project does not cause the exterior noise levels to exceed the 55 dBA residential threshold for receptors that are currently below the allowable noise levels. In addition, the proposed project will not result in a noticeable increase in noise levels. Therefore, no substantial impacts will occur.

1.4 Vibration

Based on the threshold criteria established by the Federal Transit Administration (FTA) and the California Department of Transportation (Caltrans), vibration from use of heavy construction equipment to construct the proposed project would be below the thresholds to cause damage to nearby structures and result in less than *barely perceptible* vibration at the receptors analyzed in the report. Therefore, no substantial impacts will occur.

1.5 Airport Noise

The project site is not located with two miles of a public or private use airport or helipad. Therefore, no substantial impacts will occur.

1.6 Mitigation Measures

The following mitigation measures are required to ensure that project-related short- and long-term noise levels are consistent with applicable federal, State, and local regulations.

N-1 Limit construction activities to the hours of 7:00 AM to 7:00 PM Monday through Friday and the hours of 8:00 AM to 5:00 PM on Saturdays. Construction activity shall be prohibited on Sundays and federal holidays. This mitigation measure must be implemented throughout construction and may be periodically monitored by the Planning Director or designee during routine inspections.

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N-2 Prior to issuance of grading permits, the Applicant shall submit a mitigation plan prepared by a qualified engineer or other acoustical expert for review and approval by the Planning Division that identifies noise control measures that achieve a minimum 10 dBA reduction in construction-related noise levels. The mitigation plan may include use of sound curtains, engineered equipment controls, or other methods. Noise control requirements shall be noted on project construction drawings and verified by the Building Department during standard inspection procedures.

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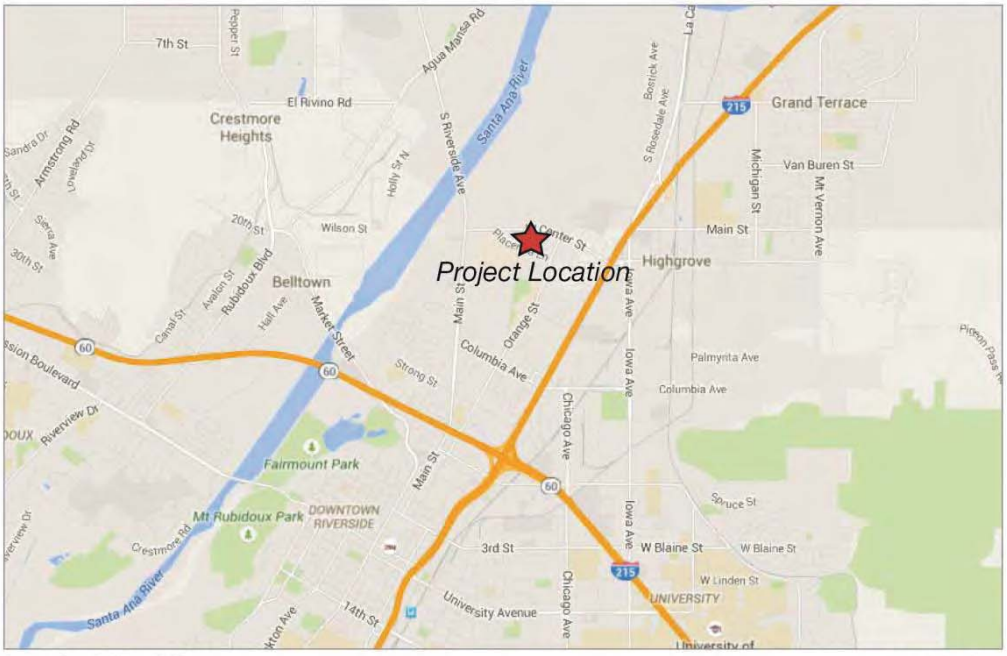
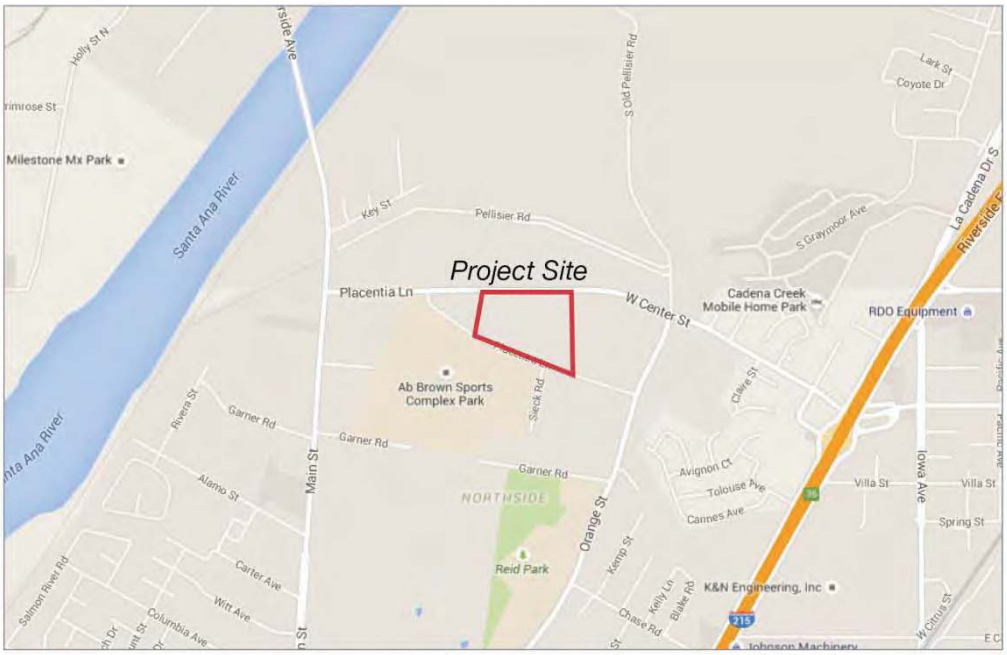


Source: Google Maps, 2015

Regional



Source: Google Maps, 2015

Vicinity

Not to Scale

Exhibit 1 Regional and Vicinity Map

Center Street Commerce Building Project
6550 Center Street, Riverside, California

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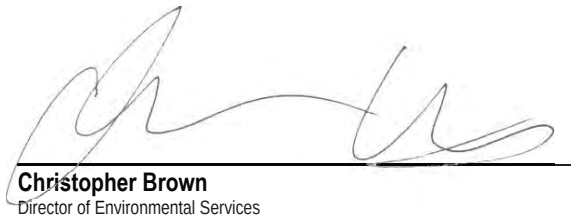
This report includes modeling and analysis of construction- and operation-related noise generated from the proposed project on surrounding land uses. Vibration effects and airport noise are also discussed herein. The project includes construction of a 308,000-square foot building on 15.63 acres in the City of Riverside, California.

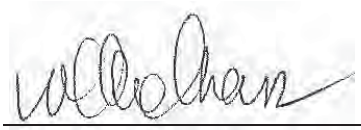
This report has been prepared utilizing project-specific characteristics where available. In those instances where project-specific data is not available, the analysis has been supplemented by model defaults or other standardized sources of comparable data. In any case where non-project defaults or other data have been used, a "worst-case" scenario was developed to ensure a conservative estimate of noise impacts.

This report has been prepared for use by the Lead Agency to assess potential project-related noise impacts to the environment in compliance with federal, State, or local guidelines, particularly with respect to the noise issues identified in Appendix G of the State CEQA Guidelines. This report does not make determinations of significance pursuant to CEQA because such determinations are required to be made solely in the purview of the Lead Agency.

This report has been prepared by Christopher Brown (Director of Environmental Services) and Olivia Chan (Associate Analyst II) of MIG, Inc. under contract to Transition Properties, LP.



Christopher Brown
Director of Environmental Services



Olivia Chan
Associate Analyst II

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3.1 Defining Noise

"Sound" is a vibratory disturbance created by a moving or vibrating source and is capable of being detected. "Noise" is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance and, in the extreme, hearing impairment.

THE PRODUCTION OF SOUND

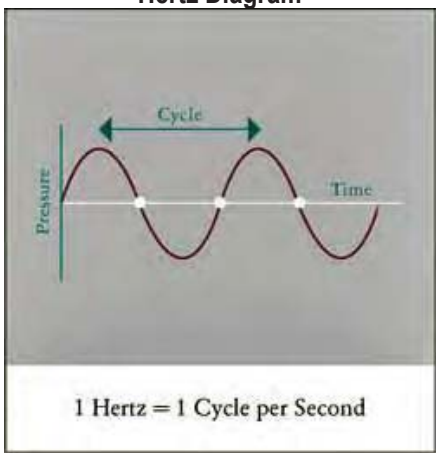
Sound has three properties: amplitude and amplitude variation of the acoustical wave (loudness), frequency (pitch), and duration of the noise. Despite the ability to measure sound, human perceptibility is subjective, and the physical response to sound complicates the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as "noisiness" or "loudness."

MEASURING SOUND

Sound pressure levels are described in logarithmic units of ratios of sound pressures to a reference pressure, squared. These units are called bels. To provide a finer description of sound, a bel is subdivided into 10 decibels, abbreviated dB. Since decibels are logarithmic units, sound pressure levels cannot be added or subtracted by ordinary arithmetic means. For example, if one automobile produces a sound pressure level of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB. In fact, they would combine to produce 73 dB. This same principle can be applied to other traffic quantities as well. In other words, doubling the traffic volume on a street or the speed of the traffic will increase the traffic noise level by three dB. Conversely, halving the traffic volume or speed will reduce the traffic noise level by three dB. A three dB change in sound is the beginning at which humans generally notice a *barely perceptible* change in sound and a five dB change is generally *readily perceptible.*[1]

Sound pressure level alone is not a reliable indicator of loudness. The frequency or pitch of a sound also has a substantial effect on how humans will respond. While the intensity of the sound is a purely physical quantity, the loudness or human response depends on the characteristics of the human ear. Human hearing is limited not only to the range of audible frequencies but also in the way it perceives the sound pressure level in that range. In general, the healthy human ear is most sensitive to sounds between 1,000 Hertz (Hz) and 5,000 Hz, and perceives both higher and lower frequency sounds of the same magnitude with less intensity. Hertz is a unit of frequency that defines any periodic event. In the case of sound pressure, a Hertz defines one cycle of a sound wave per second (see Figure 1, Hertz Diagram). To approximate the frequency response of the human ear, a series of sound pressure level adjustments is usually applied to the sound measured by a sound level meter.

Figure 1
Hertz Diagram



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STANDARDS FOR NOISE EQUIVALENT

Noise consists of pitch, loudness, and duration; therefore, a variety of methods for measuring noise have been developed. According to the California General Plan Guidelines for Noise Elements, the following are common metrics for measuring noise:[2]

L_{eq} (Equivalent Energy Noise Level): The sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over given sample periods. L_{eq} is typically computed over 1-, 8-, and 24-hour sample periods.

CNEL (Community Noise Equivalent Level): The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five decibels to sound levels in the evening from 7:00 PM to 10:00 PM and after addition of ten decibels to sound levels in the night from 10:00 PM to 7:00 AM.

L_{dn} (Day-Night Average Level): The average equivalent A-weighted sound level during a 24-hour day, obtained after the addition of ten decibels to sound levels in the night after 10:00 PM and before 7:00 AM.

CNEL and L_{dn} are utilized for describing ambient noise levels because they account for all noise sources over an extended period of time and account for the heightened sensitivity of people to noise during the night. L_{eq} is better utilized for describing specific and consistent sources because of the shorter reference period.

Federal and State agencies have established noise and land use compatibility guidelines that use averaging approaches to noise measurement. The State Department of Aeronautics and the California Commission on Housing and Community Development have adopted the community noise equivalent level (CNEL).

3.2 Vibration and Groundborne Noise

Vibration is the movement of mass over time. It is described in terms of frequency and amplitude and unlike sound; there is no standard way of measuring and reporting amplitude. Vibration can be described in units of velocity (inches per second) or discussed in decibel (dB) units in order to compress the range of numbers required to describe vibration. Vibration impacts to buildings are generally discussed in terms of peak particle velocity (PPV) that describes particle movement over time (in terms of physical displacement of mass). For purposes of this analysis, PPV will be used to describe all vibration for ease of reading and comparison. Vibration can impact people, structures, and sensitive equipment.[3] The primary concern related to vibration and people is the potential to annoy those working and residing in the area. Vibration with high enough amplitudes can damage structures (such as crack plaster or destroy windows). Groundborne vibration can also disrupt the use of sensitive medical and scientific instruments such as electron microscopes. Common sources of vibration within communities include construction activities and railroads.

Groundborne vibration generated by construction projects is usually highest during pile driving, rock blasting, soil compacting, jack hammering, and demolition-related activities. Next to pile driving, grading activity has the greatest potential for vibration impacts if large bulldozers, large trucks, or other heavy equipment are used.

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4.1 Sensitive Receptors

The State of California defines sensitive receptors as those land uses that require serenity or are otherwise adversely affected by noise events or conditions. Schools, libraries, churches, hospitals, and residential uses make up the majority of these areas. The proposed facility is located in a generally industrial area with industrial uses to the north and east, vacant land to the west, and open space/park use to the south. There are residential uses approximately 0.14 miles to the southeast of the project site. There are no schools located within a quarter mile of the project site. Exhibit 2 (Radius Map) identifies existing development in the project vicinity based on assessor's parcel data.

4.2 Existing Noise Levels

Short-term noise measurements at the project site were conducted to identify the ambient noise in the project vicinity. An American National Standards Institute (ANSI Section SI4 1979, Type 1) Larson Davis model LxT sound level meter was used to monitor existing ambient noise levels in the project area. The noise meter was programmed in "slow" mode to record noise levels in A-weighted form. The microphone height was set at five feet. Two 10-minute daytime noise measurements were taken between 9.48 AM and 10:12 AM on Tuesday, April 7, 2015.

Ambient noise levels ranged from 58.7 to 66.9 dBA CNEL. Ambient noise levels are a composite of noise from all sources, near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location. Measurement locations are shown in Exhibit 3 (Noise Measurement Locations). Ambient noise levels are presented in Table 1 (Ambient Noise Levels) and measurement output data is included as Appendix A.

Vehicular traffic along Center Street and Placentia Lane was the dominant noise source at measurement location 001 and truck traffic entering and exiting the industrial use at the south end of Sieck Road was the dominant noise source at measurement location 002.

Table 1
Ambient Noise Levels

Location	Time Period	Measurement Period	Description	Existing Ambient Noise Levels (dBA CNEL)
001	9:48 AM – 9:58 AM	10 Minutes	Northern property boundary on the south side of Center Street	66.9
002	10:02 AM – 10:12 AM	10 Minutes	Southwestern corner of Placentia Lane and Sieck Road	58.7

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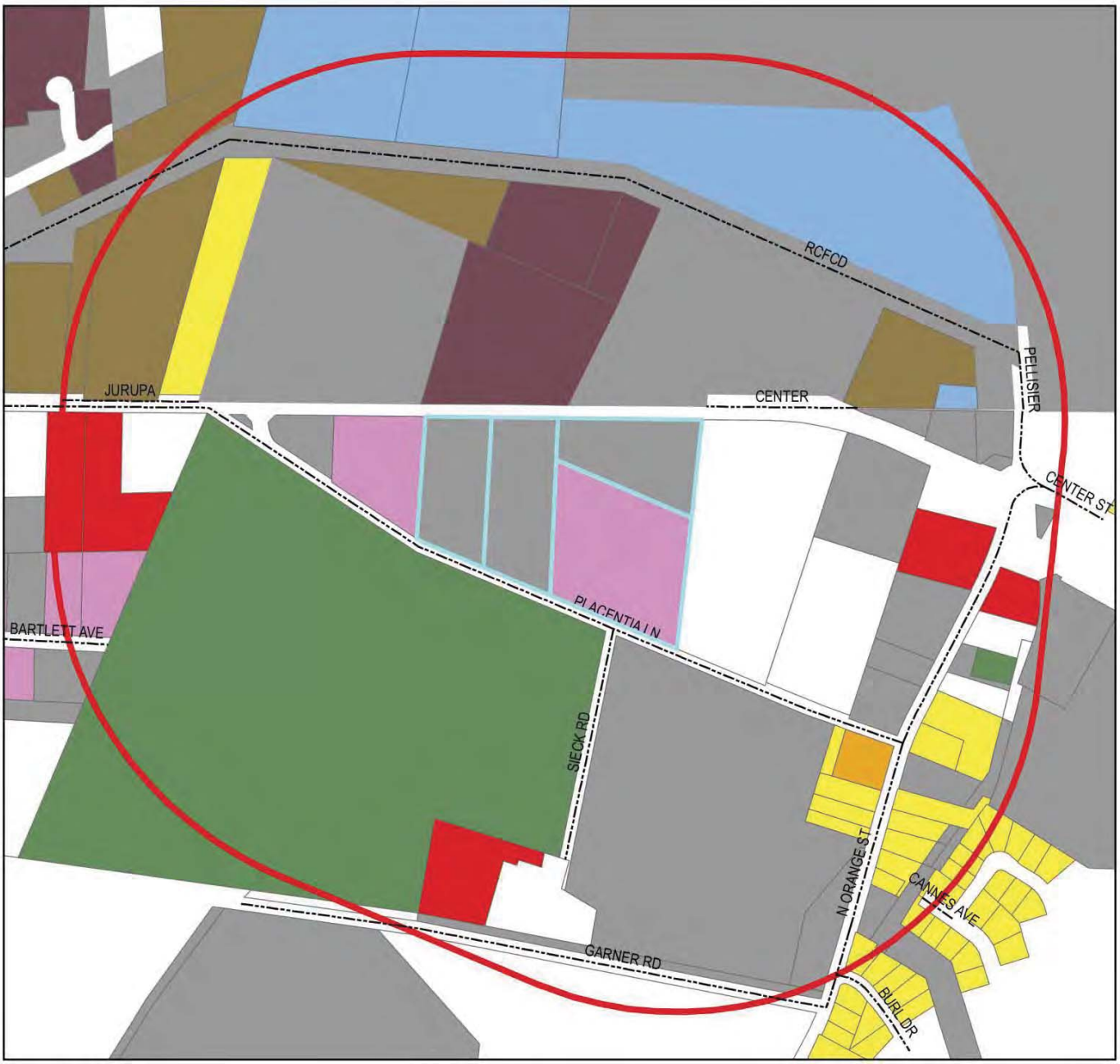

Legend

Project Site

0.25 Mile Radius

0 0.03 0.06 0.12 0.18 0.24 Miles

Land Uses

- Unknown
- Vacant
- Commercial
- Storage
- Light Industrial
- Residential Use in Commercial Zone
- Single Family Residential
- Multi-Family Residential
- Miscellaneous Structures
- Electric Power Transmissions

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Exhibit 2 Radius Map

Center Street Commerce Building Project

6550 Center Street, Riverside, California

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Source: Google Earth, 2015

Exhibit 3 Noise Measurement Locations

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5.1 Federal Regulations

FEDERAL NOISE CONTROL ACT OF 1972

The U.S. Environmental Protection Agency (EPA) Office of Noise Abatement and Control was originally established to coordinate federal noise control activities. After its inception, EPA's Office of Noise Abatement and Control issued the Federal Noise Control Act of 1972, establishing programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In response, the EPA published information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (Levels of Environmental Noise). The Levels of Environmental Noise recommended that the L_{dn} should not exceed 55 dBA outdoors or 45 dBA indoors to prevent significant activity interference and annoyance in noise-sensitive areas.

In addition, the Levels of Environmental Noise identified five dBA as an "adequate margin of safety" for a noise level increase relative to a baseline noise exposure level of 55 dBA L_{dn} (i.e., there would not be a noticeable increase in adverse community reaction with an increase of five dBA or less from this baseline level). The EPA did not promote these findings as universal standards or regulatory goals with mandatory applicability to all communities, but rather as advisory exposure levels below which there would be no risk to a community from any health or welfare effect of noise.

In 1981, EPA administrators determined that subjective issues such as noise would be better addressed at more localized levels of government. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to State and local governments. However, noise control guidelines and regulations contained in EPA rulings in prior years remain in place by designated federal agencies, allowing more individualized control for specific issues by designated federal, State, and local government agencies.

FEDERAL TRANSIT ADMINISTRATION

The Federal Transit Administration (FTA) has developed methodology and significance criteria to evaluate incremental noise impacts from surface transportation modes (i.e., on road motor vehicles and trains) as presented in Transit Noise Impact and Vibration Assessment (FTA Guidelines). These incremental noise impact criteria are based on EPA findings and subsequent studies of annoyance in communities affected by transportation noise. The FTA extended the EPA's five dBA incremental impact criterion to higher ambient levels. As baseline ambient levels increase, smaller and smaller increments are allowed to limit expected increases in community annoyance. For example, in residential areas with a baseline ambient noise level of 50 dBA CNEL, a less-than-five dBA increase in noise levels would produce a minimal increase in community annoyance levels, while at 70 dBA CNEL, only one dBA increase could be accommodated before a significant annoyance increase would occur.

VIBRATION STANDARDS

The FTA provides guidelines for maximum-acceptable vibration criteria for different types of land uses. Groundborne vibration and noise levels associated with various types of construction equipment and activities are summarized in Table 2 (Reference Vibration Source Amplitudes for Construction Equipment). Table 3 (Groundborne Vibration and Noise Impact Criteria) shows the Federal Transit Administration's maximum acceptable vibration standard for human annoyance in residences where people normally sleep is 80 VdB (less than 70 vibration events per day).

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Table 2
Reference Vibration Source Amplitudes for Construction Equipment

Equipment	Reference PPV at 25 ft (in/sec) at 25 Feet	Approximate Vibration Level (VL) at 25 Feet
Pile driver (impact)	1.518 (upper range)	112
	0.644 (typical)	104
Pile driver (sonic)	0.734 (upper range)	105
	0.170 (typical)	93
Clam shovel drop (slurry wall)	0.202	94
Hydromill	0.008 in soil	66
Slurry wall	0.017 in rock	75
Vibratory roller	0.210	94
Hoe Ram	0.089	87
Large bulldozer	0.089	87
Caisson drill	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

Notes: PPV is the peak particle velocity. Pile driver amplitude varies greatly based on equipment type and size.
Source: Federal Transit Administration. Transit Noise and Vibration Impact Assessment. 2006.

Table 3
Groundborne Vibration and Noise Impact Criteria

Land Use Category	Groundborne Vibration Impact Levels (VdB)		Groundborne Noise Impact Levels (dBA)	
	Frequent Events[1]	Infrequent Events[2]	Frequent Events[1]	Infrequent Events[2]
Category 1: Buildings where low ambient vibration is essential for interior vibrations	65 VdB[3]	65 VdB[3]	N/A	N/A
Category 2: Residences and buildings where people normally sleep	72 VdB	80 VdB	35 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use	75 VdB	83 VdB	40 dBA	48 dBA

[1] *Frequent Events – more than 70 vibration events per day*
[2] *Infrequent Events – fewer than 70 vibration events per day*
[3] *This criterion limit is based on levels that are acceptable for more moderately sensitive equipment such as optical microscopes.*
Source: United States Department of Transportation, Federal Transit Administration, Transit Noise and Vibration Assessment, 1995

The FTA and Caltrans have compiled the data from numerous studies related to vibration and have developed standards for human perception and building damage. The FTA's maximum acceptable vibration standard for human annoyance is 78 VdB at nearby vibration-sensitive land uses.[4] The Caltrans maximum vibration level standard is 0.2 in/sec PPV for the prevention of structural damage to typical residential buildings.[5]

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5.2 State Regulations

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

CEQA requires lead agencies to consider noise impacts. Under CEQA, lead agencies are directed to assess conformance to locally established noise standards or other agencies' noise standards; measure and identify the potentially significant exposure of people to or generation of excessive noise levels; measure and identify potentially significant permanent or temporary increase in ambient noise levels; and measure and identify potentially significant impacts associated with air traffic.

CALIFORNIA NOISE CONTROL ACT OF 1973

Sections 46000-46080 of the California Health and Safety Code, known as the California Noise Control Act of 1973, find that excessive noise is a serious hazard to public health and welfare and that exposure to certain levels of noise can result in physiological, psychological, and economic damage. It also finds that there is a continuous and increasing bombardment of noise in the urban, suburban, and rural areas. The California Noise Control Act declares that the State of California has a responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise. It is the policy of the State to provide an environment for all Californians free from noise that jeopardizes their health or welfare.

CALIFORNIA NOISE INSULATION STANDARDS (CCR TITLE 24)

In 1974, the California Commission on Housing and Community Development adopted noise insulation standards for multi-family residential buildings (Title 24, Part 2, California Code of Regulations). Title 24 establishes standards for interior room noise (attributable to outside noise sources). The regulations also specify that acoustical studies must be prepared whenever a residential building or structure is proposed to be located near an existing or adopted freeway route, expressway, parkway, major street, thoroughfare, rail line, rapid transit line, or industrial noise source, and where such noise source or sources create an exterior CNEL (or L_{dn}) of 60 dBA or greater. Such acoustical analysis must demonstrate that the residence has been designed to limit intruding noise to an interior CNEL (or L_{dn}) of 45 dBA or below [California's Title 24 Noise Standards, Chap. 2-35].

STATE OF CALIFORNIA GENERAL PLAN GUIDELINES 2003

Though not adopted by law, the State of California General Plan Guidelines 2003, published by the California Governor's Office of Planning and Research (OPR) (OPR Guidelines), provides guidance for the compatibility of projects within areas of specific noise exposure. The OPR Guidelines identify the suitability of various types of development relative to a range of outdoor noise levels and provide each local community some flexibility in setting local noise standards that allow for the variability in community preferences. Findings presented in the Levels of Environmental Noise Document (EPA 1974) influenced the recommendations of the OPR Guidelines, most importantly in the choice of noise exposure metrics (i.e., L_{dn} or CNEL) and in the upper limits for the normally acceptable outdoor exposure of noise-sensitive uses.

The OPR Guidelines include a Noise and Land Use Compatibility Matrix which identifies acceptable and unacceptable community noise exposure limits for various land use categories. Where the "normally acceptable" range is used, it is defined as the highest noise level that should be considered for the construction of the buildings which do not incorporate any special acoustical treatment or noise mitigation. The "conditionally acceptable" or "normally acceptable" ranges include conditions calling for detailed acoustical study or construction mitigation to reduce interior exposure levels prior to the construction or operation of the building under the listed exposure levels.

CALIFORNIA DEPARTMENT OF TRANSPORTATION

According to the Caltrans vibration manual, large bulldozers, vibratory rollers (used to compact earth), and loaded trucks utilized during grading activities can produce vibration, and depending on the level of vibration, could cause annoyance at uses within the project vicinity or damage structures. Caltrans has developed a screening tool to determine of vibration from construction equipment is substantial enough to impact surrounding uses.

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The Caltrans vibration manual establishes thresholds for vibration impacts on buildings and humans. These thresholds are summarized in Tables 4 (Vibration Damage Potential Threshold Criteria) and 5 (Vibration Annoyance Potential Threshold Criteria).

Table 4
Vibration Damage Potential Threshold Criteria

Structural Integrity	Maximum PPV (in/sec)	
	Transient	Continuous
Historic and some older buildings	0.50	0.25
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial and commercial structures	2.00	0.50
Source: Caltrans 2013		

Table 5
Vibration Annoyance Potential Threshold Criteria

Human Response	PPV Threshold (in/sec)	
	Transient	Continuous
Barely perceptible	0.035	0.012
Distinctly perceptible	0.24	0.035
Strongly perceptible	0.90	0.10
Severely perceptible	2.00	0.40
Source: Caltrans 2013		

5.3 Local Regulations

CITY OF RIVERSIDE MUNICIPAL CODE

The City of Riverside Municipal Code, under Chapter 4.25 (Nuisance Exterior Sound Level limits) Section 7.25.010 (Exterior Sound Level Limits), provides the local government ordinance relative to community noise level exposure, guidelines, and regulations.

Exterior Noise Standards

Table 7.25.010A (Exterior Noise Standards) of the Municipal Code includes exterior noise standards for daytime and nighttime noise levels for each land use category. Exterior noise levels shall not exceed 55 dBA between the hours of 7:00 AM and 10:00 PM for residential use or 70 dBA for surrounding industrial uses and 65 dBA for public recreation facilities and commercial use at any time of day.

Construction Noise Levels

Pursuant to Section 7.35.010 (General Noise Regulations), the operation or causing of any tools or equipment used in construction, drilling, repair, alteration, grading, or demolition work between the hours of 7:00 PM and 7:00 AM on Monday through Friday, between 5:00 PM and 8:00 AM on Saturdays, or any time on Sundays and federal holidays that creates a noise disturbance across residential or commercial property line or at any time exceeds the maximum permitted noise level for the underlying land use category is prohibited.

CITY OF COLTON MUNICIPAL CODE

Pursuant to Section 18.42.040 (Noise) of the Colton Municipal Code, the maximum sound level radiated by any use, when measured at the boundary line of the property of which is sound is generated, shall not be obnoxious and shall not exceed 65 dBA.

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Vibration

Pursuant to Section 18.42.050 (Vibration) of the Colton Municipal Code, ground vibration shall not be generated by equipment other than motor vehicles, trains, or by temporary construction or demolition, which is perceptible by the average person at or beyond the lot line of the property containing such activities.

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The thresholds identified in Appendix G of the State CEQA Guidelines, as implemented by the City of Riverside, have been utilized to assess the significance of the potential environmental effects of the project.

6.1 Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, the proposed project could result in potentially significant impacts related to noise if it results in:

A. Exposure of persons or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
B. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
C. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
D. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
E. For a project located within an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport, exposure of people residing or working in the project area to excessive noise levels.
F. For a project within a vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

To assess construction impacts, a worst-case construction scenario was modeled using the Federal Highway Administration's Roadway Construction Noise Model (RCNM). Modeling parameters and output are provided in Appendix B. RCNM utilizes standard noise emission levels for different types of equipment and includes utilization percentage, impact, and shielding parameters.

To assess current and opening year traffic noise levels, vehicle trips associated with surrounding roadways were modeled utilizing the SoundPLAN software. SoundPLAN is a three-dimensional noise modeling software that accounts for the shielding and reflective effects associated with intervening topography and nearby buildings.

6.2 Consistency with Applicable Standards

CONSTRUCTION NOISE LEVELS

Construction noise levels were estimated for nearby receptors using the FHWA Roadway Construction Noise Model (RCNM). See Exhibit 4 (Receptors - Construction) for receptor locations. Temporary noise increases will be greatest during the demolition phase. The model indicates that the use of construction equipment such as excavators, dozers, and concrete saws could expose the industrial use located approximately 421 feet to the south of the center of the project site to a combined noise level of 71.1 dBA $L_{max.}$ Construction equipment could expose the industrial use located 640 feet south, the industrial use located 510 feet east, and the park located 544 feet from the center of the project site to a combined noise level of 67.4 dBA L_{max}, 69.4 dBA L_{max}, and 68.8 dBA L_{max}, respectively. Within the City of Riverside, a noise level of 70 dBA is allowable at surrounding industrial uses and a noise level of 65 dBA is allowable at public recreation facilities. To the north of the project site is the City of Colton. Within the City of Colton, the maximum allowable noise level is 65 dBA. Construction activity could result in noise levels in excess of the allowable noise levels at the industrial use to the south, the public recreation use to the south, and the industrial use to the north of the project site. Therefore, Mitigation Measures N-1 and N-2 have been incorporated to reduce the impact to neighboring uses during construction.

Per Section 7.35.10 (General Noise Regulations) of the Riverside Municipal Code, construction activities occurring between the hours of 7:00 PM and 7:00 AM on Mondays through Fridays, between 5:00 PM and 8:00 AM on Saturdays, and any time on Sundays and federal holidays are prohibited. Mitigation Measure N-1 limits construction activity to the hours of 7:00 AM and 7:00 PM Monday through Friday and the hours of 8:00 AM and 5:00 PM on Saturdays. Due to the

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time limitations on construction activity, surrounding employees and park users will be exposed to limited construction noise. Because noise levels during construction activities are anticipated to exceed the City's exterior noise standards, mitigation measures will be necessary to minimize noise levels at nearby receptors. Mitigation Measure N-2 will be incorporated to minimize noise associated with general construction activities. Mitigation Measure N-2 requires preparation of a construction noise reduction plan to reduce temporary noise impacts by a minimum of 10 dBA which is a feasible performance standard based on available technology. Engineered controls include retrofitting equipment with improved exhaust and intake muffling, disengaging equipment fans, and installation of sound panels around equipment engines. These types of controls can achieve noise level reductions of approximately 10 dBA.[6] [7] Implementation of Mitigation Measure N-2 will reduce temporary noise impacts by a minimum of 10 dBA, resulting in a maximum construction noise level of 61.1 dBA at the project site and 58.8 dBA at the park located to the south of the project site. Therefore, with implementation of Mitigation Measures N-1 and N-2, construction noise will feasibly be reduced to unsubstantial levels.

OPERATIONAL NOISE LEVELS

The City of Riverside Municipal Code sets an allowable exterior noise level for industrial uses at 70 dBA CNEL, 65 dBA CNEL for public recreational facilities and office/commercial use, 60 dBA for community support uses, and 55 dBA for residential use. The City of Colton sets an allowable noise level of 65 dBA CNEL. Ambient noise at the project site would generally be defined by traffic on Center Street, Placentia Lane, and operational noise from neighboring industrial uses. A substantial increase in ambient noise is an increase that is *barely perceptible* (3 dBA). Operationally, the proposed project will result in periodic landscaping and other occasional noise generating activities. These activities are common in urban uses and do not represent a substantial increase in periodic noise in consideration that the project site is located in an industrialized area. Traffic noise from vehicular traffic generated by the proposed project was projected using SoundPLAN software was based on estimated trip generation and distribution provided by Kunzman Associates, Inc.[8]

Noise levels at the single family homes to the east and west, the industrial uses to the north and east, and the commercial use to the east were calculated (see Appendix C for output data) and projected at the ground floor (see Exhibit 6 (Receptors – Traffic Noise). The 2017 Opening Year Without and With Project traffic noise levels during the peak hour at neighboring uses are summarized in Table 6 (Opening Year 2017 Peak Hour Roadway Noise Levels). Opening Year Without and With Project exterior noise levels will be within the allowable exterior noise levels established by the City of Colton for the northern industrial use and within the established City of Riverside exterior noise standard for the industrial and commercial uses to the east and the residential use to the southeast of the project site on the east side of Orange Street. The exterior noise levels under the Without and With Project scenarios exceed allowable exterior noise levels at the residential uses to the northeast, southeast, and northwest of the project site. However, the project does not cause the exterior noise levels to exceed the 55 dBA residential threshold for receptors that are currently below the allowable noise levels. In addition, traffic noise levels will not increase more than 3 dBA as a result of the proposed project as shown in Table 6. Therefore, no significant impacts will result.

Table 6
Opening Year 2017 Peak Hour Roadway Noise Levels

Receptors	Without Project dBA CNEL		With Project dBA CNEL		Difference (AM / PM)	Significant? (AM / PM)
	AM	PM	AM	PM		
1 – Industrial (N)	57.0	57.8	58.2	58.8	+1.2 / +1.0	No / No
2 – Industrial (E)	61.3	62.3	63.3	64.1	+2.0 / +1.8	No / No
3 – Single Family Residential (NE)	**57.9**	**59.4**	**59.7**	**60.8**	+1.8 / +1.4	No / No
4 – Commercial (E)	57.4	58.2	58.2	59.0	+0.8 / +0.8	No / No
5 – Single Family Residential (SE)	53.3	54.0	53.6	54.4	+0.3 / +0.4	No / No
6 – Single Family Residential (SE)	**60.7**	**61.4**	**60.9**	**61.8**	+0.2 / +0.4	No / No
7 – Single Family Residential (NW)	**60.2**	**61.1**	**60.9**	**61.8**	+0.7 / +0.7	No / No
Bolded *noise levels exceed 55 dBA exterior threshold for residential uses.*						

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6.3 Vibration Impacts

CONSTRUCTION VIBRATION

Construction activities that use vibratory rollers and bulldozers are repetitive sources of vibration; therefore, the *continuous* threshold is used. Industrial uses are located to the north and east of the project site. As a worst case scenario, the *historic and some older buildings* threshold is used. Based on the threshold criteria summarized in Tables 4 and 5, vibration from use of heavy construction equipment for the proposed project would be below the thresholds to cause damage to nearby structures and result in less than *barely perceptible* vibration at the four receptors shown in Table 7 (Distances to Vibration Receptors) and Table 8 (Construction Vibration Impacts).

Table 7
Distances to Vibration Receptors

Receptors	Distance from Center of Project Site (ft)
1 – Industrial (N)	640
2 – Industrial (E)	510
3 – Industrial (S)	421
4 – Park (S)	544

Construction of the project does not require rock blasting, pile driving, or the use of a jack hammer, but will use a vibratory roller, and large bulldozer, and loaded trucks. All of the receptors will experience less than *barely perceptible* vibration from construction of the proposed project. Furthermore, these construction activities will be limited to the hours of 7:00 AM to 7:00 PM Mondays through Friday and the hours of 8:00 AM to 5:00 PM on Saturdays. With regard to long-term operational impacts, activities associated with the project will not result in any vibration-related impacts to adjacent or on-site properties.

Table 8
Construction Vibration Impacts

Receptors	Equipment	PPVref	Distance (feet)	PPV
1 – Single Family Home (NE)	Vibratory Roller	0.21	640	0.0031
2 – Storage Facility (N)	Vibratory Roller	0.21	510	0.0042
3 – Single Family Home (E)	Vibratory Roller	0.21	421	0.0053
4 – Single Family Home (E)	Vibratory Roller	0.21	544	0.0038
1 – Single Family Home (NE)	Large Bulldozer	0.089	640	0.0013
2 – Storage Facility (N)	Large Bulldozer	0.089	510	0.0018
3 – Single Family Home (E)	Large Bulldozer	0.089	421	0.0023
4 – Single Family Home (E)	Large Bulldozer	0.089	544	0.0016
1 – Single Family Home (NE)	Loaded Truck	0.076	640	0.0011
2 – Storage Facility (N)	Loaded Truck	0.076	510	0.0015
3 – Single Family Home (E)	Loaded Truck	0.076	421	0.0019
4 – Single Family Home (E)	Loaded Truck	0.076	544	0.0014

OPERATIONAL VIBRATION

Operation of the proposed project will include heavy-duty truck traffic along Center Street. According to the Federal Transit Administration, it is unusual for vibration from sources such as trucks to be perceptible.[9] However, according to Caltrans heavy trucks can impart groundborne vibration when the pavement is not smooth.[10] Therefore, to provide a worst case analysis, potential building damage due to project operation has been analyzed. Currently, there is concern regarding impacts to the Adobe structure located north of Center Street to the west of Orange Street (APN 246-082-002) due to heavy trucks traveling along Center Street.

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The structure is located approximately 88 feet from the centerline of the nearest lane on Center Street. According to Caltrans, the highest truck traffic vibrations generated on freeway shoulders is 2.0 PPV mm/sec (0.079 PPV in/sec). At 88 feet, the vibration level reaching the Adobe structure is 0.015 PPV. According to project trip generation as estimated by Kunzman Associates, the proposed project is anticipated to generate 64 heavy-duty trucks per day, with a maximum of five heavy-duty trucks during the PM peak hour. Although truck trips will occur periodically, the *continuous* threshold has been utilized to provide a worst case analysis. Based on the Caltrans threshold for *historic and some old buildings* as summarized in Table 4, heavy truck traffic on Center Street will not result in structure damage due to operation-related groundborne vibration. The Caltrans Transportation and Construction Vibration Guidance Manual also provides alternative thresholds, as summarized in Table 9 (Vibration Criteria for Buildings).

Table 9
Vibration Criteria for Buildings

Criteria	Building Type	Continuous Threshold PPV (in/sec)
Swiss Association of Standardization	Class IV: Construction very sensitive to vibration; objects of historic interest	0.12
Konan	Historic and Sensitive Buildings	0.12
AASHTO	Historic Sites or other critical locations	0.10
Source: Caltrans 2013		

As shown in Table 9, periodic heavy truck traffic occurring along Center Street will not exceed vibration criteria for structural damage to historic and sensitive buildings. In addition, According to the Whiffen vibration criteria for continuous vibration, vibration levels of 0.006 – 0.019 are unlikely to cause damage to buildings of any type. The 0.015 PPV resulting from heavy truck traffic will be within this continuous threshold. Therefore, no substantial impact will result.

6.4 Airport Noise

The project site is located with two miles of a public or private use airport or helipad. Therefore, no substantial impacts will occur.

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Exhibit 4 Receptors - Construction

Center Street Commerce Building Project

6550 Center Street, Riverside, California

Source: Google Earth, 2015

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Exhibit 5 Receptors - Traffic Noise

Center Street Commerce Building Project

6550 Center Street, Riverside, California

Source: Google Earth, 2015

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The following mitigation measures are required to ensure that project-related noise levels will not exceed established thresholds.

N-1 Limit construction activities to the hours of 7:00 AM to 7:00 PM Monday through Friday and the hours of 8:00 AM to 5:00 PM on Saturdays. Construction activity shall be prohibited on Sundays and federal holidays. This mitigation measure must be implemented throughout construction and may be periodically monitored by the Planning Director or designee during routine inspections.

N-2 Prior to issuance of grading permits, the Applicant shall submit a mitigation plan prepared by a qualified engineer or other acoustical expert for review and approval by the Planning Division that identifies noise control measures that achieve a minimum 10 dBA reduction in construction-related noise levels. The mitigation plan may include use of sound curtains, engineered equipment controls, or other methods. Noise control requirements shall be noted on project construction drawings and verified by the Building Department during standard inspection procedures.

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1 California Department of Transportation. Basics of Highway Noise: Technical Noise Supplement. November 2009.
2 California Governor's Office of Planning and Research. General Plan Guidelines. 2003
3 California Department of Transportation. Transportation- and Construction-Induced Vibration Guidance Manual. June 2004
4 Federal Transit Administration. *Transit Noise and Vibration Impact Assessment.* 2006
5 California Department of Transportation. *Transportation and Construction Vibration Guidance Manual. Division of Environmental Analysis. September 2013*
6 United States Bureau of Mines. Mining Machinery Noise Control Guidelines. 1983
7 United States Bureau of Mines. Noise Abatement Techniques for Construction Equipment. August 1979
8 Kunzman Associates, Inc. Center Street Warehouse Project Traffic Impact Analysis. January 19, 2016
9 Federal Transit Administration. Transit Noise and Vibration Impact Assessment. May 2006
10 California Department of Transportation, Transportation and Construction Vibration Guidance Manual, September 2013

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Appendix A Noise Measurement Data

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Appendix B Construction Noise and Vibration Output Data

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Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 6/4/2015
Case Description: 1 Demolition

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial (N)	Industrial	70	70	70

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Excavator	No	40		80.7	640	0
Excavator	No	40		80.7	640	0
Excavator	No	40		80.7	640	0
Dozer	No	40		81.7	640	0
Dozer	No	40		81.7	640	0
Concrete Saw	No	20		89.6	640	0

				Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)							
				Day		Evening		Night		Day		Evening		Night			
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq		
Excavator		58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Excavator		58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Excavator		58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Dozer		59.5	55.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Dozer		59.5	55.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Concrete Saw		67.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	Total	67.4	64.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial (E)	Industrial	70	70	70

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Excavator	No	40		80.7	510	0
Excavator	No	40		80.7	510	0
Excavator	No	40		80.7	510	0
Dozer	No	40		81.7	510	0
Dozer	No	40		81.7	510	0
Concrete Saw	No	20		89.6	510	0

				Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)							
				Day		Evening		Night		Day		Evening		Night			
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq		
Excavator		60.5	56.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Excavator		60.5	56.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Excavator		60.5	56.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Dozer		61.5	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Dozer		61.5	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Concrete Saw		69.4	62.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	Total	69.4	66.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (S)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	421	0
Excavator	No	40		80.7	421	0
Excavator	No	40		80.7	421	0
Dozer	No	40		81.7	421	0
Dozer	No	40		81.7	421	0
Concrete Saw	No	20		89.6	421	0

Results

		Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator		62.2	58.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		62.2	58.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		62.2	58.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		63.2	59.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		63.2	59.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw		71.1	64.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	71.1	67.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Park (S)	Industrial	65	65	65

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	544	0
Excavator	No	40		80.7	544	0
Excavator	No	40		80.7	544	0
Dozer	No	40		81.7	544	0
Dozer	No	40		81.7	544	0
Concrete Saw	No	20		89.6	544	0

Results

		Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator		60	56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		60	56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		60	56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		60.9	57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		60.9	57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Saw		68.8	61.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	68.8	65.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 6/4/2015
Case Description: 2 Site Preparation

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (N)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		640	0
Tractor	No	40	84		640	0
Backhoe	No	40		77.6	640	0
Backhoe	No	40		77.6	640	0
Dozer	No	40		81.7	640	0
Dozer	No	40		81.7	640	0
Dozer	No	40		81.7	640	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	61.9	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	61.9	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	55.4	51.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	55.4	51.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	59.5	55.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	59.5	55.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	59.5	55.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	61.9	64.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (E)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		510	0
Tractor	No	40	84		510	0
Backhoe	No	40		77.6	510	0
Backhoe	No	40		77.6	510	0
Dozer	No	40		81.7	510	0
Dozer	No	40		81.7	510	0
Dozer	No	40		81.7	510	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	63.8	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	63.8	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	57.4	53.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	57.4	53.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	61.5	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	61.5	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	61.5	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	63.8	66.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (S)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40		84	421	0
Tractor	No	40		84	421	0
Backhoe	No	40		77.6	421	0
Backhoe	No	40		77.6	421	0
Dozer	No	40		81.7	421	0
Dozer	No	40		81.7	421	0
Dozer	No	40		81.7	421	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	65.5	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	65.5	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	59.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	59.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	63.2	59.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	63.2	59.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	63.2	59.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	65.5	67.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Park (S)	Industrial	65	65	65

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40		84	544	0
Tractor	No	40		84	544	0
Backhoe	No	40		77.6	544	0
Backhoe	No	40		77.6	544	0
Dozer	No	40		81.7	544	0
Dozer	No	40		81.7	544	0
Dozer	No	40		81.7	544	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	63.3	59.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	63.3	59.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	60.9	57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	60.9	57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	60.9	57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	63.3	65.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 6/4/2015
Case Description: 3 Grading

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial (N)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	640	0
Tractor	No	40	84		640	0
Backhoe	No	40		77.6	640	0
Grader	No	40	85		640	0
Excavator	No	40		80.7	640	0
Excavator	No	40		80.7	640	0
Scraper	No	40		83.6	640	0
Scraper	No	40		83.6	640	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		59.5	55.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		61.9	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		55.4	51.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		62.9	58.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		61.4	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		61.4	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	62.9	65.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial (E)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	510	0
Tractor	No	40	84		510	0
Backhoe	No	40		77.6	510	0
Grader	No	40	85		510	0
Excavator	No	40		80.7	510	0
Excavator	No	40		80.7	510	0
Scraper	No	40		83.6	510	0
Scraper	No	40		83.6	510	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		61.5	57.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		63.8	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		57.4	53.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		64.8	60.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		60.5	56.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		60.5	56.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		63.4	59.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		63.4	59.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	64.8	67.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial (S)	Industrial	70	70	70

			Equipment				
			Spec	Actual	Receptor	Estimated	
		Impact	Lmax	Lmax	Distance	Shielding	
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer		No	40		81.7	421	0
Tractor		No	40	84		421	0
Backhoe		No	40		77.6	421	0
Grader		No	40	85		421	0
Excavator		No	40		80.7	421	0
Excavator		No	40		80.7	421	0
Scraper		No	40		83.6	421	0
Scraper		No	40		83.6	421	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		63.2	59.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		65.5	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		59.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		66.5	62.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		62.2	58.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		62.2	58.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		65.1	61.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		65.1	61.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	66.5	69.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Park (S)	Industrial	65	65	65

			Equipment				
			Spec	Actual	Receptor	Estimated	
		Impact	Lmax	Lmax	Distance	Shielding	
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Dozer		No	40		81.7	544	0
Tractor		No	40	84		544	0
Backhoe		No	40		77.6	544	0
Grader		No	40	85		544	0
Excavator		No	40		80.7	544	0
Excavator		No	40		80.7	544	0
Scraper		No	40		83.6	544	0
Scraper		No	40		83.6	544	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer		60.9	57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		63.3	59.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		64.3	60.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		60	56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		60	56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		62.8	58.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		62.8	58.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	64.3	66.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Report date: 6/4/2015
Case Description: 4 Building Construction

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (N)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	640	0
All Other Equipment > 5 HP	No	50	85		640	0
All Other Equipment > 5 HP	No	50	85		640	0
All Other Equipment > 5 HP	No	50	85		640	0
Tractor	No	40	84		640	0
Backhoe	No	40		77.6	640	0
Backhoe	No	40		77.6	640	0
Welder / Torch	No	40		74	640	0
Generator	No	50		80.6	640	0

Results

		Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane		58.4	50.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		62.9	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		62.9	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		62.9	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		61.9	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		55.4	51.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		55.4	51.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		51.9	47.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator		58.5	55.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	62.9	66.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (E)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	510	0
All Other Equipment > 5 HP	No	50	85		510	0
All Other Equipment > 5 HP	No	50	85		510	0
All Other Equipment > 5 HP	No	50	85		510	0
Tractor	No	40	84		510	0
Backhoe	No	40		77.6	510	0
Backhoe	No	40		77.6	510	0
Welder / Torch	No	40		74	510	0
Generator	No	50		80.6	510	0

Results

		Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane		60.4	52.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		64.8	61.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		64.8	61.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		64.8	61.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		63.8	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		57.4	53.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		57.4	53.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		53.8	49.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator		60.5	57.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	64.8	68.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (S)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	421	0
All Other Equipment > 5 HP	No	50	85		421	0
All Other Equipment > 5 HP	No	50	85		421	0
All Other Equipment > 5 HP	No	50	85		421	0
Tractor	No	40	84		421	0
Backhoe	No	40		77.6	421	0
Backhoe	No	40		77.6	421	0
Welder / Torch	No	40		74	421	0
Generator	No	50		80.6	421	0

Results

Equipment	Land Use	Calculated (dBA) *Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Crane		62	54.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		66.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		66.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		66.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		65.5	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		59.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		59.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		55.5	51.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator		62.1	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	66.5	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Park (S)	Industrial	65	65	65

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	544	0
All Other Equipment > 5 HP	No	50	85		544	0
All Other Equipment > 5 HP	No	50	85		544	0
All Other Equipment > 5 HP	No	50	85		544	0
Tractor	No	40	84		544	0
Backhoe	No	40		77.6	544	0
Backhoe	No	40		77.6	544	0
Welder / Torch	No	40		74	544	0
Generator	No	50		80.6	544	0

Results

Equipment	Land Use	Calculated (dBA) *Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Crane		59.8	51.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		64.3	61.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		64.3	61.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		64.3	61.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		63.3	59.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		53.3	49.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator		59.9	56.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	64.3	67.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 6/4/2015
Case Description: 5 Architectural Coating

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial (N)	Industrial	70	70	70

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Compressor (air)	No	40		77.7	640	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		55.5	51.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	55.5	51.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial (E)	Industrial	70	70	70

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Compressor (air)	No	40		77.7	510	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		57.5	53.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	57.5	53.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial (S)	Industrial	70	70	70

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Compressor (air)	No	40		77.7	421	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	59.2	55.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Park (S)	Industrial	65	65	65

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	544	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Compressor (air)	56.9	53	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	56.9	53	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 6/4/2015
Case Description: 6 Paving

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial (N)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	640	0
Paver	No	50		77.2	640	0
Roller	No	20		80	640	0
Roller	No	20		80	640	0
All Other Equipment > 5 HP	No	50	85		640	0
All Other Equipment > 5 HP	No	50	85		640	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		55.1	52.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver		55.1	52.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller		57.9	50.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller		57.9	50.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		62.9	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		62.9	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	62.9	64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Industrial (E)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	510	0
Paver	No	50		77.2	510	0
Roller	No	20		80	510	0
Roller	No	20		80	510	0
All Other Equipment > 5 HP	No	50	85		510	0
All Other Equipment > 5 HP	No	50	85		510	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		60.4	52.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver		64.8	61.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller		64.8	61.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller		64.8	61.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		63.8	59.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP		57.4	53.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	64.8	68.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Industrial (S)	Industrial	70	70	70

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	421	0
Paver	No	50		77.2	421	0
Roller	No	20		80	421	0
Roller	No	20		80	421	0
All Other Equipment > 5 HP	No	50	85		421	0
All Other Equipment > 5 HP	No	50	85		421	0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	62	54.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	66.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	66.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	66.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	65.5	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	59.1	55.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	66.5	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Park (S)	Industrial	65	65	65

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	544	0
Paver	No	50		77.2	544	0
Roller	No	20		80	544	0
Roller	No	20		80	544	0
All Other Equipment > 5 HP	No	50	85		544	0
All Other Equipment > 5 HP	No	50	85		544	0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	59.8	51.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	64.3	61.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	64.3	61.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	64.3	61.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	63.3	59.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	56.8	52.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	64.3	67.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Center Street Warehouse

Receptors	Distance (ft)
1 – Industrial (N)	640
2 – Industrial (E)	510
3 – Industrial (S)	421
4 – Park (S)	544

Equipment	PPVref	D	n	Eref	Eequip	PPV
Vibratory Roller	0.21	640	1.3			0.0031
Vibratory Roller	0.21	510	1.3			0.0042
Vibratory Roller	0.21	421	1.3			0.0053
Vibratory Roller	0.21	544	1.3			0.0038
Large Bulldozer	0.089	640	1.3			0.0013
Large Bulldozer	0.089	510	1.3			0.0018
Large Bulldozer	0.089	421	1.3			0.0023
Large Bulldozer	0.089	544	1.3			0.0016
Loaded Truck	0.076	640	1.3			0.0011
Loaded Truck	0.076	510	1.3			0.0015
Loaded Truck	0.076	421	1.3			0.0019
Loaded Truck	0.076	544	1.3			0.0014

Table

Equipment	PPVref	Distance	PPV
Vibratory Roller	0.21	640	0.0031
Vibratory Roller	0.21	510	0.0042
Vibratory Roller	0.21	421	0.0053
Vibratory Roller	0.21	544	0.0038
Large Bulldozer	0.089	640	0.0013
Large Bulldozer	0.089	510	0.0018
Large Bulldozer	0.089	421	0.0023
Large Bulldozer	0.089	544	0.0016
Loaded Truck	0.076	640	0.0011
Loaded Truck	0.076	510	0.0015
Loaded Truck	0.076	421	0.0019
Loaded Truck	0.076	544	0.0014

Appendix C SoundPLAN Output Data

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Center Street
Opening Year 2017 Without Project
Road

Stationing km	ADT Veh/24h	Traffic values Vehicles type	Vehicle name	AM Veh/h	PM Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Max %
Center Street (EB)		Traffic direction:	In entry direction								
0+000	4288	Total	-	132	272	-	none	-	-	Average (of DGAC and PCC)	0
0+000	4288	Automobiles	-	90	187	56	none	-	-	Average (of DGAC and PCC)	0
0+000	4288	Medium trucks	-	34	70	56	none	-	-	Average (of DGAC and PCC)	0
0+000	4288	Heavy trucks	-	7	13	56	none	-	-	Average (of DGAC and PCC)	0
0+000	4288	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+000	4288	Motorcycles	-	1	2	56	none	-	-	Average (of DGAC and PCC)	0
0+000	4288	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+544	4920	Total	-	166	283	-	none	-	-	Average (of DGAC and PCC)	0
0+544	4920	Automobiles	-	114	194	56	none	-	-	Average (of DGAC and PCC)	0
0+544	4920	Medium trucks	-	43	73	56	none	-	-	Average (of DGAC and PCC)	0
0+544	4920	Heavy trucks	-	8	14	56	none	-	-	Average (of DGAC and PCC)	0
0+544	4920	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+544	4920	Motorcycles	-	1	2	56	none	-	-	Average (of DGAC and PCC)	0
0+544	4920	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+794	4920	Total	-	166	283	-	none	-	-	Average (of DGAC and PCC)	0
0+794	4920	Automobiles	-	114	194	56	none	-	-	Average (of DGAC and PCC)	0
0+794	4920	Medium trucks	-	43	73	56	none	-	-	Average (of DGAC and PCC)	0
0+794	4920	Heavy trucks	-	8	14	56	none	-	-	Average (of DGAC and PCC)	0
0+794	4920	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+794	4920	Motorcycles	-	1	2	56	none	-	-	Average (of DGAC and PCC)	0
0+794	4920	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+948	4920	Total	-	166	283	-	none	-	-	Average (of DGAC and PCC)	0
0+948	4920	Automobiles	-	114	194	56	none	-	-	Average (of DGAC and PCC)	0
0+948	4920	Medium trucks	-	43	73	56	none	-	-	Average (of DGAC and PCC)	0
0+948	4920	Heavy trucks	-	8	14	56	none	-	-	Average (of DGAC and PCC)	0
0+948	4920	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+948	4920	Motorcycles	-	1	2	56	none	-	-	Average (of DGAC and PCC)	0
0+948	4920	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+184	6720	Total	-	206	428	-	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	6720	Automobiles	-	141	294	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	6720	Medium trucks	-	53	110	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	6720	Heavy trucks	-	10	21	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	6720	Buses	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	6720	Motorcycles	-	2	3	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	6720	Auxiliary Vehicle	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0
1+253	6720	Total	-	206	428	-	none	-	-	Average (of DGAC and PCC)	0
1+253	6720	Automobiles	-	141	294	56	none	-	-	Average (of DGAC and PCC)	0
1+253	6720	Medium trucks	-	53	110	56	none	-	-	Average (of DGAC and PCC)	0
1+253	6720	Heavy trucks	-	10	21	56	none	-	-	Average (of DGAC and PCC)	0
1+253	6720	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+253	6720	Motorcycles	-	2	3	56	none	-	-	Average (of DGAC and PCC)	0
1+253	6720	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+516	-						-	-	-	-	-
Orange Street SB		Traffic direction:	In entry direction								
0+893	1904	Total	-	74	90	-	none	-	-	Average (of DGAC and PCC)	0

0+893	1904	Automobiles	-	50	61	56	none	-	-	Average (of DGAC and PCC)		0
0+893	1904	Medium trucks	-	19	23	56	none	-	-	Average (of DGAC and PCC)		0
0+893	1904	Heavy trucks	-	4	5	56	none	-	-	Average (of DGAC and PCC)		0
0+893	1904	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
0+893	1904	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)		0
0+893	1904	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
1+072	1904	Total	-	74	90	-	none	-	-	Average (of DGAC and PCC)		0
1+072	1904	Automobiles	-	50	61	56	none	-	-	Average (of DGAC and PCC)		0
1+072	1904	Medium trucks	-	19	23	56	none	-	-	Average (of DGAC and PCC)		0
1+072	1904	Heavy trucks	-	4	5	56	none	-	-	Average (of DGAC and PCC)		0
1+072	1904	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
1+072	1904	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)		0
1+072	1904	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
1+450	-						-	-	-	-	-	
Center Street WB		Traffic direction:	In entry direction									
0+893	4192	Total	-	190	144	-	none	-	-	Average (of DGAC and PCC)		0
0+893	4192	Automobiles	-	130	99	56	none	-	-	Average (of DGAC and PCC)		0
0+893	4192	Medium trucks	-	49	37	56	none	-	-	Average (of DGAC and PCC)		0
0+893	4192	Heavy trucks	-	10	7	56	none	-	-	Average (of DGAC and PCC)		0
0+893	4192	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
0+893	4192	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)		0
0+893	4192	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
1+228	4192	Total	-	190	144	-	Stop sign	0	-	Average (of DGAC and PCC)		0
1+228	4192	Automobiles	-	130	99	56	Stop sign	0	-	Average (of DGAC and PCC)		0
1+228	4192	Medium trucks	-	49	37	56	Stop sign	0	-	Average (of DGAC and PCC)		0
1+228	4192	Heavy trucks	-	10	7	56	Stop sign	0	-	Average (of DGAC and PCC)		0
1+228	4192	Buses	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)		0
1+228	4192	Motorcycles	-	1	1	56	Stop sign	0	-	Average (of DGAC and PCC)		0
1+228	4192	Auxiliary Vehicle	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)		0
1+427	4192	Total	-	190	144	-	none	-	-	Average (of DGAC and PCC)		0
1+427	4192	Automobiles	-	130	99	56	none	-	-	Average (of DGAC and PCC)		0
1+427	4192	Medium trucks	-	49	37	56	none	-	-	Average (of DGAC and PCC)		0
1+427	4192	Heavy trucks	-	10	7	56	none	-	-	Average (of DGAC and PCC)		0
1+427	4192	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
1+427	4192	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)		0
1+427	4192	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
1+603	4208	Total	-	190	146	-	none	-	-	Average (of DGAC and PCC)		0
1+603	4208	Automobiles	-	130	100	56	none	-	-	Average (of DGAC and PCC)		0
1+603	4208	Medium trucks	-	49	38	56	none	-	-	Average (of DGAC and PCC)		0
1+603	4208	Heavy trucks	-	10	7	56	none	-	-	Average (of DGAC and PCC)		0
1+603	4208	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
1+603	4208	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)		0
1+603	4208	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
1+873	4208	Total	-	190	146	-	none	-	-	Average (of DGAC and PCC)		0
1+873	4208	Automobiles	-	130	100	56	none	-	-	Average (of DGAC and PCC)		0
1+873	4208	Medium trucks	-	49	38	56	none	-	-	Average (of DGAC and PCC)		0
1+873	4208	Heavy trucks	-	10	7	56	none	-	-	Average (of DGAC and PCC)		0
1+873	4208	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
1+873	4208	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)		0
1+873	4208	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)		0
2+414	-						-	-	-	-	-	
0+000	4208	Total	-	190	146	-	Stop sign	0	-	Average (of DGAC and PCC)		0
0+000	4208	Automobiles	-	130	100	56	Stop sign	0	-	Average (of DGAC and PCC)		0

0+000	4208	Medium trucks	-	49	38	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
0+000	4208	Heavy trucks	-	10	7	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
0+000	4208	Buses	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0		
0+000	4208	Motorcycles	-	1	1	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
0+000	4208	Auxiliary Vehicle	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0		
Orange Street NB	Traffic direction:	In entry direction											
0+893	360	Total	-	16	13	-	none	-	-	Average (of DGAC and PCC)	0		
0+893	360	Automobiles	-	10	8	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	360	Medium trucks	-	4	3	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	360	Heavy trucks	-	1	1	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	360	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
0+893	360	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	360	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+331	360	Total	-	16	13	-	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+331	360	Automobiles	-	10	8	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+331	360	Medium trucks	-	4	3	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+331	360	Heavy trucks	-	1	1	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+331	360	Buses	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+331	360	Motorcycles	-	1	1	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+331	360	Auxiliary Vehicle	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+450	-						-	-	-	-	-		
0+000	360	Total	-	16	13	-	none	-	-	Average (of DGAC and PCC)	0		
0+000	360	Automobiles	-	10	8	56	none	-	-	Average (of DGAC and PCC)	0		
0+000	360	Medium trucks	-	4	3	56	none	-	-	Average (of DGAC and PCC)	0		
0+000	360	Heavy trucks	-	1	1	56	none	-	-	Average (of DGAC and PCC)	0		
0+000	360	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
0+000	360	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)	0		
0+000	360	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
Main Street NB	Traffic direction:	In entry direction											
1+023	21400	Total	-	877	921	-	none	-	-	Average (of DGAC and PCC)	0		
1+023	21400	Automobiles	-	604	634	56	none	-	-	Average (of DGAC and PCC)	0		
1+023	21400	Medium trucks	-	226	237	56	none	-	-	Average (of DGAC and PCC)	0		
1+023	21400	Heavy trucks	-	42	45	56	none	-	-	Average (of DGAC and PCC)	0		
1+023	21400	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+023	21400	Motorcycles	-	5	5	56	none	-	-	Average (of DGAC and PCC)	0		
1+023	21400	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+559	-						-	-	-	-	-		
0+000	21400	Total	-	877	921	-	none	-	-	Average (of DGAC and PCC)	0		
0+000	21400	Automobiles	-	604	634	56	none	-	-	Average (of DGAC and PCC)	0		
0+000	21400	Medium trucks	-	226	237	56	none	-	-	Average (of DGAC and PCC)	0		
0+000	21400	Heavy trucks	-	42	45	56	none	-	-	Average (of DGAC and PCC)	0		
0+000	21400	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
0+000	21400	Motorcycles	-	5	5	56	none	-	-	Average (of DGAC and PCC)	0		
0+000	21400	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
Main Street NB1	Traffic direction:	In entry direction											
1+023	19608	Total	-	740	971	-	none	-	-	Average (of DGAC and PCC)	0		
1+023	19608	Automobiles	-	509	669	56	none	-	-	Average (of DGAC and PCC)	0		
1+023	19608	Medium trucks	-	191	250	56	none	-	-	Average (of DGAC and PCC)	0		
1+023	19608	Heavy trucks	-	36	47	56	none	-	-	Average (of DGAC and PCC)	0		
1+023	19608	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+023	19608	Motorcycles	-	4	5	56	none	-	-	Average (of DGAC and PCC)	0		
1+023	19608	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+560	-						-	-	-	-	-		

Center Street
Opening Year 2017 Without Project
Receivers

No.	Receiver name	Floor	Level AM	Level PM
			dB(A)	
1	1 Industrial (N)	GF	57.0	57.8
2	2 Industrial (E)	GF	61.3	62.3
3	3 Single Family Residential (NE)	GF	57.9	59.4
4	4 Commercial (EE)	GF	57.4	58.2
5	5 Single Family Home (SE)	GF	53.3	54.0
6	6 Single Family Home (SE)	GF	60.7	61.4
7	7 Single Family Home (NW)	GF	60.2	61.1

Planning Commission - Exhibit 1 - Development Review Committee Staff Report
Development Review Committee - Exhibit 7 - CEQA Documents

Center Street
Opening Year 2017 Without Project
Contributions

Source name			Level AM	Level PM
			dB(A)	
1 Industrial (N)	GF		57.0	57.8
Center Street (EB)			53.5	55.8
Center Street WB			54.4	53.2
Main Street NB			34.8	35.0
Main Street NB1			34.0	35.2
Orange Street NB			23.7	23.3
Orange Street SB			29.8	30.7
2 Industrial (E)	GF		61.3	62.3
Center Street (EB)			58.4	60.8
Center Street WB			58.1	56.8
Main Street NB			33.1	33.3
Main Street NB1			32.3	33.5
Orange Street NB			27.7	27.4
Orange Street SB			33.9	34.8
3 Single Family Residential (NE)		GF	57.9	59.4
Center Street (EB)			54.8	58.0
Center Street WB			54.8	53.5
Main Street NB			29.0	29.2
Main Street NB1			28.2	29.4
Orange Street NB			34.6	34.1
Orange Street SB			40.6	41.4
4 Commercial (EE)	GF		57.4	58.2
Center Street (EB)			49.6	52.4
Center Street WB			49.8	48.4
Main Street NB			30.0	30.2
Main Street NB1			29.2	30.4
Orange Street NB			48.3	47.6
Orange Street SB			54.7	55.6
5 Single Family Home (SE)		GF	53.3	54.0
Center Street (EB)			39.0	41.8
Center Street WB			39.3	37.9
Main Street NB			30.1	30.3
Main Street NB1			29.3	30.5
Orange Street NB			46.3	45.7
Orange Street SB			51.9	52.7
6 Single Family Home (SE)		GF	60.7	61.4

Center Street (EB)		38.3	41.1
Center Street WB		38.7	37.3
Main Street NB		30.4	30.6
Main Street NB1		29.6	30.8
Orange Street NB		51.8	51.1
Orange Street SB		60.1	60.9
7 Single Family Home (NW)	GF	60.2	61.1
Center Street (EB)		55.9	58.9
Center Street WB		57.6	56.4
Main Street NB		45.8	46.0
Main Street NB1		45.0	46.2
Orange Street NB		17.8	17.2
Orange Street SB		23.7	24.6

Center Street
Opening Year 2017 Without Project
Receiver Spectra

No.	Name	Time slice	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1 kHz	2 kHz	2 kHz	2 kHz	3 kHz	4 kHz	5 kHz	6 kHz	8 kHz	10 kHz
1	1 Industrial (N)	AM	30.3	35.8	39.4	41.5	42.9	44.2	45	45	44.5	44.2	45.1	46.2	45.9	46.6	45.3	44.9	43.4	42.9	42.9	41.4	39.6	36.7	34	30.3
1	1 Industrial (N)	PM	30.9	36.5	40	42.1	43.5	44.8	45.7	45.7	45.3	45	45.9	46.9	46.6	47.2	46	45.8	44.3	43.7	43.7	42.2	40.4	37.6	34.8	31.2
2	2 Industrial (E)	AM	32.6	38.2	41.8	43.9	45.3	46.7	47.7	48	48.7	48.9	50.1	51.5	50.9	51.3	50	49.6	48.7	47.8	46.8	44.8	42.2	40.3	37.7	34.3
2	2 Industrial (E)	PM	33.7	39.3	42.8	44.9	46.4	47.8	48.8	49.1	49.9	49.8	51.1	52.9	52.1	52.2	50.7	50.3	49.4	48.5	47.6	45.7	43.1	41.2	38.6	35.1
3	3 Single Family Residential (NE)	AM	30.9	36.5	40	42.1	43.6	44.9	45.8	45.8	45.5	45.2	46.2	47.2	46.8	47.6	46.4	45.8	44.4	43.8	43.7	41.9	40.4	37.5	34.8	31.2
3	3 Single Family Residential (NE)	PM	32.2	37.8	41.3	43.4	44.9	46.2	47.1	47.3	46.9	46.8	47.7	48.5	48.3	49	47.9	47.5	46.1	45.3	45.2	43.3	41.8	39.1	36.4	32.8
4	4 Commercial (EE)	AM	30.2	35.7	39.3	41.4	42.8	44.2	45.1	45.1	45.2	44.6	45.6	47.4	46.7	46.9	45.4	45.1	44.1	43.6	42.9	41.3	39.1	36.5	33.7	30.2
4	4 Commercial (EE)	PM	31.1	36.6	40.2	42.3	43.7	45.1	46	46	46	45.4	46.4	48.1	47.5	47.7	46.1	45.9	44.9	44.4	43.7	42.1	40.1	37.4	34.6	31
5	5 Single Family Home (SE)	AM	26.4	31.8	35.3	37.5	38.9	40.3	41.2	40.8	40.6	40.6	41.7	42.3	41.9	42.7	41.6	40.9	40.1	39.8	39.8	38.3	36.5	33.8	31.1	27.5
5	5 Single Family Home (SE)	PM	27	32.5	36	38.1	39.6	41	41.8	41.3	41.1	41.2	42.3	42.8	42.5	43.3	42.3	41.6	40.8	40.5	40.6	39	37.2	34.6	31.8	28.2
6	6 Single Family Home (SE)	AM	30.4	35.9	39.4	41.6	43.1	44.7	46	47.5	47.7	49.3	51.2	51.5	50.7	51.1	49.9	48.8	47.7	45.7	44.3	42.1	41.1	38.5	35.8	32.4
6	6 Single Family Home (SE)	PM	31.1	36.6	40.2	42.3	43.8	45.4	46.7	48.2	48.4	50	51.9	52.2	51.4	51.8	50.6	49.5	48.4	46.4	45	42.9	41.9	39.2	36.6	33.1
7	7 Single Family Home (NW)	AM	32.5	38	41.6	43.7	45.1	46.4	47.3	47	47.5	47.6	48.8	49.9	49.5	50.1	48.4	47.7	47.2	46.5	46.4	44.7	42.3	39.9	37.2	33.7
7	7 Single Family Home (NW)	PM	33.3	38.8	42.4	44.5	45.9	47.2	48.1	48	48.3	48.6	49.8	50.6	50.2	51.1	49.6	49	48.4	47.7	47.5	45.7	43.3	40.9	38.2	34.7

Center Street
Opening Year With Project
Road

Stationing km	ADT Veh/24h	Traffic values Vehicles type	Vehicle name	AM Veh/h	PM Veh/h	Speed km/h	Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Max %
Center Street (EB)		Traffic direction:	In entry direction								
0+000	5360	Total	-	186	298	-	none	-	-	Average (of DGAC and PCC)	0
0+000	5360	Automobiles	-	128	205	56	none	-	-	Average (of DGAC and PCC)	0
0+000	5360	Medium trucks	-	48	77	56	none	-	-	Average (of DGAC and PCC)	0
0+000	5360	Heavy trucks	-	9	14	56	none	-	-	Average (of DGAC and PCC)	0
0+000	5360	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+000	5360	Motorcycles	-	1	2	56	none	-	-	Average (of DGAC and PCC)	0
0+000	5360	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+544	5968	Total	-	201	344	-	none	-	-	Average (of DGAC and PCC)	0
0+544	5968	Automobiles	-	138	236	56	none	-	-	Average (of DGAC and PCC)	0
0+544	5968	Medium trucks	-	52	89	56	none	-	-	Average (of DGAC and PCC)	0
0+544	5968	Heavy trucks	-	10	17	56	none	-	-	Average (of DGAC and PCC)	0
0+544	5968	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+544	5968	Motorcycles	-	1	2	56	none	-	-	Average (of DGAC and PCC)	0
0+544	5968	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+794	6920	Total	-	217	431	-	none	-	-	Average (of DGAC and PCC)	0
0+794	6920	Automobiles	-	148	296	56	none	-	-	Average (of DGAC and PCC)	0
0+794	6920	Medium trucks	-	56	111	56	none	-	-	Average (of DGAC and PCC)	0
0+794	6920	Heavy trucks	-	11	21	56	none	-	-	Average (of DGAC and PCC)	0
0+794	6920	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+794	6920	Motorcycles	-	2	3	56	none	-	-	Average (of DGAC and PCC)	0
0+794	6920	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+948	6920	Total	-	217	431	-	none	-	-	Average (of DGAC and PCC)	0
0+948	6920	Automobiles	-	148	296	56	none	-	-	Average (of DGAC and PCC)	0
0+948	6920	Medium trucks	-	56	111	56	none	-	-	Average (of DGAC and PCC)	0
0+948	6920	Heavy trucks	-	11	21	56	none	-	-	Average (of DGAC and PCC)	0
0+948	6920	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+948	6920	Motorcycles	-	2	3	56	none	-	-	Average (of DGAC and PCC)	0
0+948	6920	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+184	8536	Total	-	252	563	-	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	8536	Automobiles	-	173	388	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	8536	Medium trucks	-	65	145	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	8536	Heavy trucks	-	12	27	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	8536	Buses	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	8536	Motorcycles	-	2	3	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+184	8536	Auxiliary Vehicle	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0
1+253	8536	Total	-	252	563	-	none	-	-	Average (of DGAC and PCC)	0
1+253	8536	Automobiles	-	173	388	56	none	-	-	Average (of DGAC and PCC)	0
1+253	8536	Medium trucks	-	65	145	56	none	-	-	Average (of DGAC and PCC)	0
1+253	8536	Heavy trucks	-	12	27	56	none	-	-	Average (of DGAC and PCC)	0
1+253	8536	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+253	8536	Motorcycles	-	2	3	56	none	-	-	Average (of DGAC and PCC)	0
1+253	8536	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+516	-						-	-	-	-	-
Orange Street SB		Traffic direction:	In entry direction								
0+893	2048	Total	-	78	100	-	none	-	-	Average (of DGAC and PCC)	0

0+893	2048	Automobiles	-	53	68	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	2048	Medium trucks	-	20	26	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	2048	Heavy trucks	-	4	5	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	2048	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
0+893	2048	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	2048	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+017	2048	Total	-	78	100	-	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+017	2048	Automobiles	-	53	68	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+017	2048	Medium trucks	-	20	26	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+017	2048	Heavy trucks	-	4	5	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+017	2048	Buses	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+017	2048	Motorcycles	-	1	1	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+017	2048	Auxiliary Vehicle	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+072	2048	Total	-	78	100	-	none	-	-	Average (of DGAC and PCC)	0		
1+072	2048	Automobiles	-	53	68	56	none	-	-	Average (of DGAC and PCC)	0		
1+072	2048	Medium trucks	-	20	26	56	none	-	-	Average (of DGAC and PCC)	0		
1+072	2048	Heavy trucks	-	4	5	56	none	-	-	Average (of DGAC and PCC)	0		
1+072	2048	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+072	2048	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)	0		
1+072	2048	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+450	-						-	-	-	-	-		
Center Street WB		Traffic direction:	In entry direction										
0+893	6128	Total	-	269	228	-	none	-	-	Average (of DGAC and PCC)	0		
0+893	6128	Automobiles	-	154	156	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	6128	Medium trucks	-	95	59	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	6128	Heavy trucks	-	18	11	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	6128	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
0+893	6128	Motorcycles	-	2	2	56	none	-	-	Average (of DGAC and PCC)	0		
0+893	6128	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+228	7728	Total	-	369	228	-	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+228	7728	Automobiles	-	254	156	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+228	7728	Medium trucks	-	95	59	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+228	7728	Heavy trucks	-	18	11	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+228	7728	Buses	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+228	7728	Motorcycles	-	2	2	56	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+228	7728	Auxiliary Vehicle	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0		
1+427	7728	Total	-	369	228	-	none	-	-	Average (of DGAC and PCC)	0		
1+427	7728	Automobiles	-	254	156	56	none	-	-	Average (of DGAC and PCC)	0		
1+427	7728	Medium trucks	-	95	59	56	none	-	-	Average (of DGAC and PCC)	0		
1+427	7728	Heavy trucks	-	18	11	56	none	-	-	Average (of DGAC and PCC)	0		
1+427	7728	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+427	7728	Motorcycles	-	2	2	56	none	-	-	Average (of DGAC and PCC)	0		
1+427	7728	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+603	5688	Total	-	260	191	-	none	-	-	Average (of DGAC and PCC)	0		
1+603	5688	Automobiles	-	178	131	56	none	-	-	Average (of DGAC and PCC)	0		
1+603	5688	Medium trucks	-	67	49	56	none	-	-	Average (of DGAC and PCC)	0		
1+603	5688	Heavy trucks	-	13	10	56	none	-	-	Average (of DGAC and PCC)	0		
1+603	5688	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+603	5688	Motorcycles	-	2	1	56	none	-	-	Average (of DGAC and PCC)	0		
1+603	5688	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0		
1+873	4840	Total	-	206	193	-	none	-	-	Average (of DGAC and PCC)	0		
1+873	4840	Automobiles	-	141	132	56	none	-	-	Average (of DGAC and PCC)	0		
1+873	4840	Medium trucks	-	53	50	56	none	-	-	Average (of DGAC and PCC)	0		

1+873	4840	Heavy trucks	-	10	10	56	none	-	-	Average (of DGAC and PCC)	0
1+873	4840	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+873	4840	Motorcycles	-	2	1	56	none	-	-	Average (of DGAC and PCC)	0
1+873	4840	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
2+414	-						-	-	-	-	-	
0+000	4840	Total	-	206	193	-	Stop sign	0	-	Average (of DGAC and PCC)	0
0+000	4840	Automobiles	-	141	132	56	Stop sign	0	-	Average (of DGAC and PCC)	0
0+000	4840	Medium trucks	-	53	50	56	Stop sign	0	-	Average (of DGAC and PCC)	0
0+000	4840	Heavy trucks	-	10	10	56	Stop sign	0	-	Average (of DGAC and PCC)	0
0+000	4840	Buses	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0
0+000	4840	Motorcycles	-	2	1	56	Stop sign	0	-	Average (of DGAC and PCC)	0
0+000	4840	Auxiliary Vehicle	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0
Orange Street NB		Traffic direction:	In entry direction								
0+893	360	Total	-	16	13	-	none	-	-	Average (of DGAC and PCC)	0
0+893	360	Automobiles	-	10	8	56	none	-	-	Average (of DGAC and PCC)	0
0+893	360	Medium trucks	-	4	3	56	none	-	-	Average (of DGAC and PCC)	0
0+893	360	Heavy trucks	-	1	1	56	none	-	-	Average (of DGAC and PCC)	0
0+893	360	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+893	360	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)	0
0+893	360	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+331	360	Total	-	16	13	-	Stop sign	0	-	Average (of DGAC and PCC)	0
1+331	360	Automobiles	-	10	8	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+331	360	Medium trucks	-	4	3	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+331	360	Heavy trucks	-	1	1	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+331	360	Buses	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0
1+331	360	Motorcycles	-	1	1	56	Stop sign	0	-	Average (of DGAC and PCC)	0
1+331	360	Auxiliary Vehicle	-	-	-	-	Stop sign	0	-	Average (of DGAC and PCC)	0
1+450	-						-	-	-	-	-	
0+000	360	Total	-	16	13	-	none	-	-	Average (of DGAC and PCC)	0
0+000	360	Automobiles	-	10	8	56	none	-	-	Average (of DGAC and PCC)	0
0+000	360	Medium trucks	-	4	3	56	none	-	-	Average (of DGAC and PCC)	0
0+000	360	Heavy trucks	-	1	1	56	none	-	-	Average (of DGAC and PCC)	0
0+000	360	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+000	360	Motorcycles	-	1	1	56	none	-	-	Average (of DGAC and PCC)	0
0+000	360	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
Main Street NB		Traffic direction:	In entry direction								
1+023	21728	Total	-	885	946	-	none	-	-	Average (of DGAC and PCC)	0
1+023	21728	Automobiles	-	609	651	56	none	-	-	Average (of DGAC and PCC)	0
1+023	21728	Medium trucks	-	228	244	56	none	-	-	Average (of DGAC and PCC)	0
1+023	21728	Heavy trucks	-	43	46	56	none	-	-	Average (of DGAC and PCC)	0
1+023	21728	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+023	21728	Motorcycles	-	5	5	56	none	-	-	Average (of DGAC and PCC)	0
1+023	21728	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
1+559	-						-	-	-	-	-	
0+000	21728	Total	-	885	946	-	none	-	-	Average (of DGAC and PCC)	0
0+000	21728	Automobiles	-	609	651	56	none	-	-	Average (of DGAC and PCC)	0
0+000	21728	Medium trucks	-	228	244	56	none	-	-	Average (of DGAC and PCC)	0
0+000	21728	Heavy trucks	-	43	46	56	none	-	-	Average (of DGAC and PCC)	0
0+000	21728	Buses	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
0+000	21728	Motorcycles	-	5	5	56	none	-	-	Average (of DGAC and PCC)	0
0+000	21728	Auxiliary Vehicle	-	-	-	-	none	-	-	Average (of DGAC and PCC)	0
Main Street NB1		Traffic direction:	In entry direction								
1+023	19880	Total	-	746	993	-	none	-	-	Average (of DGAC and PCC)	0

1+023		19880	Automobiles	-		514	684	56	none	-	-	Average (of DGAC and PCC)	0
1+023		19880	Medium trucks	-		192	256	56	none	-	-	Average (of DGAC and PCC)	0
1+023		19880	Heavy trucks	-		36	48	56	none	-	-	Average (of DGAC and PCC)	0
1+023		19880	Buses	-	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+023		19880	Motorcycles	-		4	5	56	none	-	-	Average (of DGAC and PCC)	0
1+023		19880	Auxiliary Vehicle	-	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+560	-								-	-	-	-	-

Center Street
Opening Year 2017 With Project
Receivers

No.	Receiver name	Floor	Level AM	Level PM
			dB(A)	
1	1 Industrial (N)	GF	58.2	58.8
2	2 Industrial (E)	GF	63.3	64.1
3	3 Single Family Residential (NE)	GF	59.7	60.8
4	4 Commercial (EE)	GF	58.2	59.0
5	5 Single Family Home (SE)	GF	53.6	54.4
6	6 Single Family Home (SE)	GF	60.9	61.8
7	7 Single Family Home (NW)	GF	60.9	61.8

Planning Commission - Exhibit 1 - Development Review Committee Staff Report
Development Review Committee - Exhibit 7 - CEQA Documents

Center Street
Opening Year 2017 With Project
Contributions

Source name			Level AM	Level PM
			dB(A)	
1 Industrial (N)	GF		58.2	58.8
Center Street (EB)			54.4	56.8
Center Street WB			55.8	54.5
Main Street NB			34.9	35.2
Main Street NB1			34.1	35.3
Orange Street NB			23.7	23.3
Orange Street SB			29.9	30.9
2 Industrial (E)	GF		63.3	64.1
Center Street (EB)			59.7	62.6
Center Street WB			60.8	58.7
Main Street NB			33.1	33.4
Main Street NB1			32.3	33.6
Orange Street NB			27.7	27.4
Orange Street SB			34.0	35.0
3 Single Family Residential (NE)		GF	59.7	60.8
Center Street (EB)			55.7	59.1
Center Street WB			57.3	55.5
Main Street NB			29.0	29.3
Main Street NB1			28.3	29.5
Orange Street NB			34.6	34.1
Orange Street SB			40.7	41.7
4 Commercial (EE)	GF		58.2	59.0
Center Street (EB)			50.7	53.9
Center Street WB			52.4	50.4
Main Street NB			30.0	30.3
Main Street NB1			29.2	30.5
Orange Street NB			48.3	47.6
Orange Street SB			54.9	55.9
5 Single Family Home (SE)		GF	53.6	54.4
Center Street (EB)			40.0	43.1
Center Street WB			41.7	39.8
Main Street NB			30.1	30.4
Main Street NB1			29.3	30.6
Orange Street NB			46.3	45.7
Orange Street SB			52.0	53.1
6 Single Family Home (SE)		GF	60.9	61.8

Center Street (EB)		39.4	42.4
Center Street WB		41.0	39.2
Main Street NB		30.4	30.7
Main Street NB1		29.6	30.9
Orange Street NB		51.8	51.1
Orange Street SB		60.2	61.3
7 Single Family Home (NW)	GF	60.9	61.8
Center Street (EB)		57.2	59.3
Center Street WB		57.9	57.7
Main Street NB		45.8	46.1
Main Street NB1		45.0	46.3
Orange Street NB		17.8	17.2
Orange Street SB		23.9	24.9

Center Street
Opening Year 2017 With Project
Receiver Spectra

No.	Name	Time slice	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1 kHz	1 kHz	2 kHz	2 kHz	2 kHz	3 kHz	4 kHz	5 kHz	6 kHz	8 kHz	10 kHz
1	1 Industrial (N)	AM	31.5	37	40.6	42.7	44.1	45.4	46.3	46.2	45.7	45.4	46.3	47.4	47	47.8	46.5	46.1	44.6	44	44	42.6	40.7	37.8	35.1	31.5
1	1 Industrial (N)	PM	32	37.5	41.1	43.2	44.6	45.9	46.8	46.8	46.3	46	47	47.9	47.6	48.2	47.1	46.8	45.4	44.7	44.8	43.3	41.4	38.6	35.9	32.2
2	2 Industrial (E)	AM	34.5	40.1	43.6	45.8	47.2	48.6	49.6	50	50.7	50.9	52.1	53.3	52.8	53.4	52.1	51.7	50.9	49.9	48.9	46.8	44.2	42.3	39.7	36.3
2	2 Industrial (E)	PM	35.5	41	44.6	46.7	48.2	49.5	50.6	50.9	51.7	51.7	52.9	54.7	53.9	54.1	52.5	52.2	51.2	50.3	49.4	47.4	44.9	43	40.3	37
3	3 Single Family Residential (NE)	AM	32.7	38.2	41.7	43.8	45.3	46.6	47.6	47.6	47.2	47	47.9	49	48.5	49.3	48	47.4	46	45.5	45.3	43.6	42.1	39.1	36.4	32.8
3	3 Single Family Residential (NE)	PM	33.6	39.2	42.7	44.8	46.3	47.6	48.5	48.6	48.3	48.2	49.1	50	49.7	50.4	49.3	48.8	47.5	46.7	46.5	44.7	43.2	40.4	37.7	34.2
4	4 Commercial (EE)	AM	31.3	36.8	40.3	42.4	43.9	45.2	46.1	46.1	45.9	45.3	46.2	48	47.3	47.7	46.2	46	45	44.5	43.8	42.2	40	37.3	34.5	30.9
4	4 Commercial (EE)	PM	32.1	37.7	41.2	43.3	44.7	46.1	46.9	46.9	46.7	46.1	47	48.8	48.1	48.5	47	46.8	45.8	45.3	44.5	43	40.9	38.2	35.4	31.8
5	5 Single Family Home (SE)	AM	26.9	32.3	35.8	37.9	39.4	40.7	41.5	41	40.8	40.8	41.9	42.4	42.1	42.9	41.8	41.1	40.4	40.1	40.2	38.8	37	34.3	31.6	27.9
5	5 Single Family Home (SE)	PM	27.6	33.1	36.6	38.7	40.2	41.5	42.3	41.7	41.5	41.5	42.6	43.1	42.8	43.6	42.6	42	41.2	41	41.1	39.6	37.7	35.1	32.3	28.7
6	6 Single Family Home (SE)	AM	30.6	36.1	39.7	41.8	43.4	44.9	46.2	47.6	47.8	49.4	51.4	51.7	50.9	51.3	50.1	49	47.9	45.9	44.5	42.4	41.4	38.7	36.1	32.6
6	6 Single Family Home (SE)	PM	31.5	37	40.6	42.7	44.3	45.8	47	48.4	48.6	50.3	52.3	52.6	51.8	52.2	51	49.9	48.7	46.8	45.3	43.2	42.3	39.6	36.9	33.5
7	7 Single Family Home (NW)	AM	33.1	38.7	42.2	44.3	45.7	47	47.9	47.8	48.2	48.4	49.5	50.5	50.2	50.9	49.2	48.5	47.9	47.2	47	45.3	42.9	40.5	37.8	34.4
7	7 Single Family Home (NW)	PM	33.9	39.5	43.1	45.1	46.6	47.9	48.8	48.7	49.1	49.3	50.5	51.3	51	51.8	50.3	49.6	49	48.3	48.1	46.3	43.9	41.5	38.9	35.4

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Planning Commission - Exhibit 1 - Development Review Committee Staff Report
Development Review Committee - Exhibit 7 - CEQA Documents