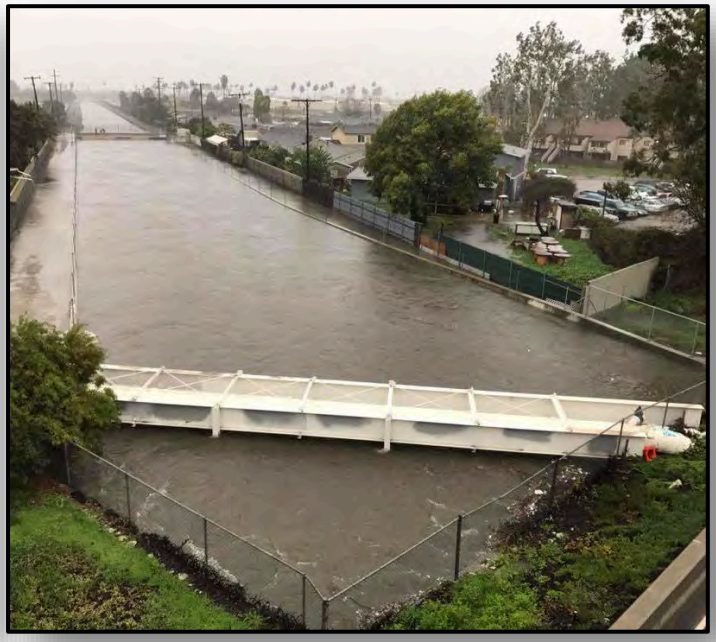
APPENDIX I – GENERAL CONFORMITY ANALYSIS

For

WESTMINSTER, EAST GARDEN GROVE

FLOOD RISK MANAGEMENT STUDY



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Contents

Figures

Tables

Appendix I – General Conformity Analysis

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1.0 Introduction

1.1 Project Area and Scope

The Westminster watershed is located in western Orange County, California, about 25 miles southeast of the City of Los Angeles. The watershed is about 74 square miles and heavily urbanized, including the cities of Anaheim, Stanton, Cypress, Garden Grove, Westminster, Fountain Valley, Los Alamitos, Seal Beach, and Huntington Beach. Local storm water runoff is collected by a number of drainage channels and conveyed to a system of receiving water bodies that outlet to the Pacific Ocean (Figure 1).

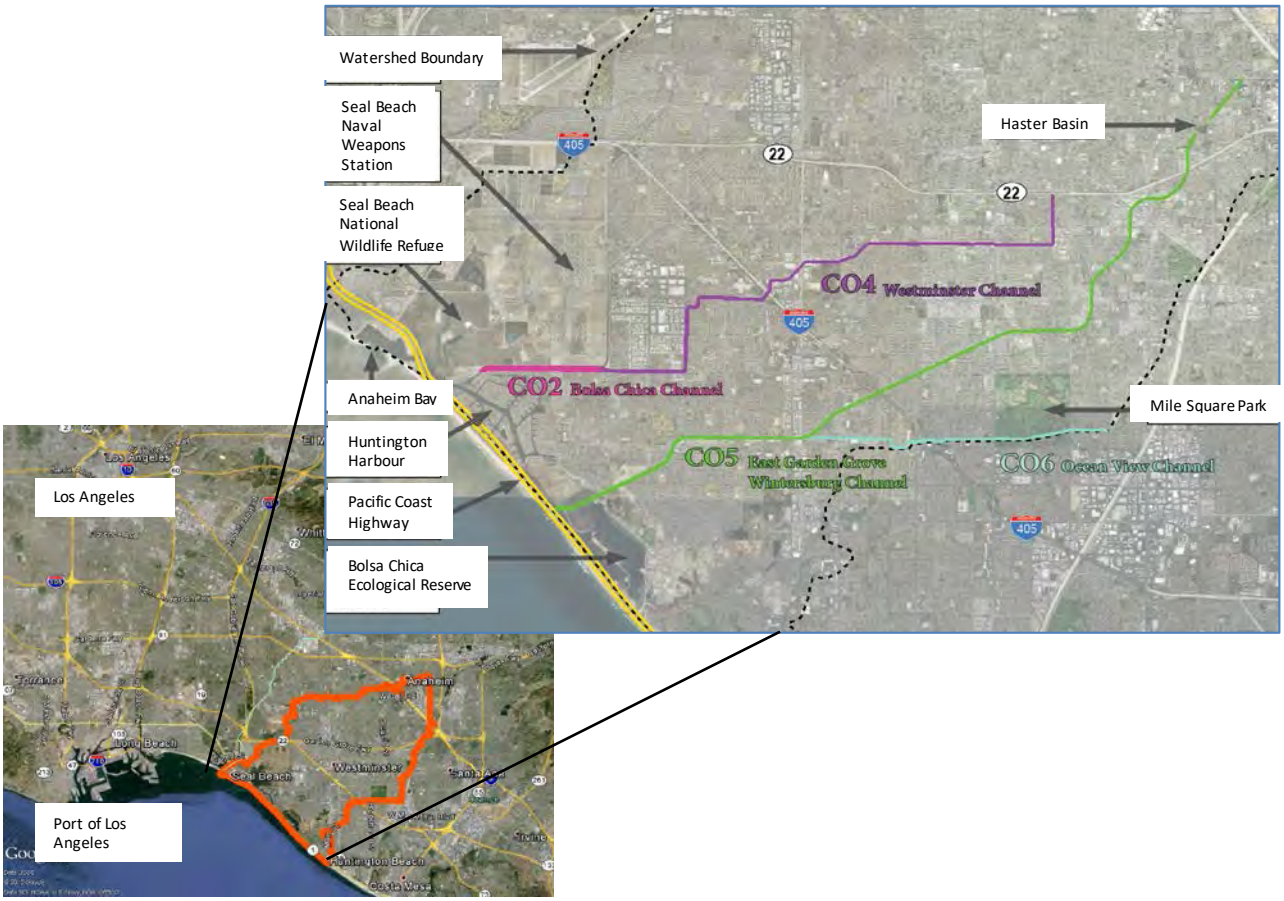

Figure 1: Westminster Watershed Drainage Channels C02, C04, C05, and C06 and Receiving Water Bodies Outer Bolsa Bay/Bolsa Chica Ecological Reserve, Huntington Harbour, Seal Beach National Wildlife Refuge, and Anaheim Bay.

The objective of the Westminster, East Garden Grove Feasibility Study is to investigate alternatives for flood risk reduction to communities of Orange County (USACE, 2018). This report focuses on the Maximum Channel Modifications Plan because this alternative involves the most construction activity, produces the most construction emissions, and represents the worst possible air quality impacts. Modifications considered in channels C02, C04, C05, and C06 (Figure 1) include geometry and/or lining modification, road crossings, and floodwall construction. Modifications considered in downstream waters include increasing the span of the Warner Avenue Bridge, tide gate replacement, and floodwall construction along the Pacific Coast Highway (PCH). Once construction is complete, this alternative would not produce any additional direct or indirect emissions since the final product will not result in new facilities or features that have on-going air emissions. Therefore construction emissions will be the focus of this analysis and long-term impacts are considered minimal.

1.2 Clean Air Act

The 1990 amendments to the Clean Air Act (CAA) [42 United States Code 7401 et seq.] require Federal agencies to ensure that their actions conform to the appropriate State Implementation Plan (SIP). A SIP is a plan that provides for the implementation, maintenance, and enforcement of the National Ambient Air Quality Standards (NAAQS), and includes emission limitations and control measures to attain and maintain the NAAQS. Conformity to a SIP, as defined in the CAA, means conformity to a SIP's purpose of reducing the severity and number of violations of the NAAQS to achieve attainment of such standards.

The Federal agency responsible for an action is required to determine if the action conforms to the applicable SIP. Section 176(c) of the Clean Air Act prohibits Federal entities from taking actions in nonattainment or maintenance areas which do not conform to the State implementation plan (SIP) for the attainment and maintenance of the National Ambient Air Quality Standards (NAAQS). Therefore, the purpose of conformity is to (1) ensure Federal activities do not interfere with the budgets in the SIPs; (2) ensure actions do not cause or contribute to new violations, and (3) ensure attainment and maintenance of the NAAQS.

1.3 General Conformity

On November 30, 1993, the United States Environmental Protection Agency (USEPA) promulgated regulations, known as the General Conformity Regulations, to ensure that other Federal actions (other than transportation projects, which are addressed separately) also conformed to the SIPs (58 FR 63214). With respect to General Conformity, all Federal Actions are covered unless otherwise exempt, e.g. actions covered by transportation conformity, actions with clearly de minimis emissions, exempt actions listed in rule, or actions covered by a Presumed to Conform demo (approved list). Conformity can be demonstrated by: (1) showing emission increases are included in SIP; (2) State agrees to include increases in SIP; (3) areas without SIPs, no new violations of NAAQS and/or no increase in frequency/severity of violations; (4) Offsets, and (5) Mitigation. Some emissions are excluded from conformity determination, such as those already subject to new source review; those covered by CERCLA or compliance with other environmental laws, actions not reasonably foreseeable, and those for which the Agency has no continuing program responsibility.

The purpose of this analysis is to document determination of conformity of Westminster Maximum Channel Modifications, which could impact Orange County in California by emitting pollutants from off-road diesel-fueled construction equipment, on-road gasoline and diesel-fueled vehicles, material handling and grading, and paved surfaces. This conformity analysis has been prepared in accordance with the final rule of the USEPA, Determining Conformity of General Federal Actions to State or Federal Implementation Plans, published in the Federal Register on November 30, 1993. The general conformity rule [40 Code of Federal Regulations (CFR) Part 93, Subpart B] was effective January 31, 1994.

1.4 Criteria Air Pollutants

National Ambient Air Quality Standards (NAAQS) have been established for six common air pollutants considered harmful to public health and the environment (NAAQS Table, 2016). The criteria pollutants for which air quality standards have been established under the CAA are particulate matter, ground-level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead. Table 1 provides a summary of the current NAAQS for each pollutant.

Table 1: National Ambient Air Quality Standards for Six Critica Pollutants (NAAQS Table, 2016)

Pollutant		Primary/Secondary Pollutant Status	Averaging Time	Level	Form
Carbon Monoxide (CO)		Primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hours	35 ppm	
Lead (Pb)		Primary & secondary	Rolling 3 month average	0.15 ug/m^3	Not to be exceeded
Nitrogen Dioxide (NO_2)		Primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Primary & secondary	1 year	53 ppb	Annual Mean
Ozone (O_3)		Primary & secondary	8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particulate Matter (PM)	$PM_{2.5}$	Primary	1 year	12.0 ug/m^3	annual mean, averaged over 3 years
		Secondary	1 year	15.0 ug/m^3	annual mean, averaged over 3 years
		Primary & secondary	24 hours	35 ug/m^3	98th percentile, averaged over 3 years
	PM_{10}	Primary & secondary	24 hours	150 ug/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)		Primary	1 hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

1.5 Nonattainment Areas

Areas of the country where air pollution levels persistently exceed the NAAQS are designated as nonattainment areas. The general conformity rule applies to Federal actions occurring in air basins designated as nonattainment for criteria pollutants or in attainment areas subject to maintenance plans (maintenance areas). Table 2 summarizes the attainment status of the study area in Orange County, California that is potentially impacted by Westminster channel modifications (CA Nonattainment Status, 2018). The area is currently not attaining Ozone and $PM_{2.5}$ national standards, and is maintaining Carbon Monoxide, Nitrogen Dioxide, and Particulate Matter PM_{10} national standards.

Table 2: NAAQS Attainment Designations for Orange County, CA.

Pollutant	Federal Nonattainment Classification	Federal Maintenance Classification
Carbon Monoxide (CO)	Attainment	Yes
Lead (Pb)	Attainment	No
Nitrogen Dioxide (NO_2)	Attainment	Yes
Ozone (O_3) 8-hour	Extreme Nonattainment	No
Particulate Matter (PM) PM_{10}	Attainment	Yes
Particulate Matter (PM) $PM_{2.5}$	Nonattainment	No
Sulfur Dioxide (SO_2)	Attainment	No

2.0 General Conformity Determination Process

The general conformity rule consists of three major parts: applicability, analysis, and procedure. These three parts are described in the following sections.

2.1 Applicability

The general conformity rule ensures actions by federal agencies in nonattainment and maintenance areas do not interfere with a state's plan to meet national air quality standards. Westminster channel modifications would increase atmospheric emissions by operating off-road diesel equipment and on-road diesel and gas vehicles, creating fugitive dust, and paving road surfaces in western Orange County, CA.

2.1.1 De Minimis Emissions Levels

To focus conformity requirements on those Federal actions with the potential to have significant air quality impacts, threshold (de minimis) rates of emissions (Table 3) were established in the final rule. With the exception of lead, the de minimis levels are based on the CAA's major stationary source definitions for the criteria pollutants (and precursors of criteria pollutants), and vary by the severity of the nonattainment area. A conformity determination is required when the annual net total of direct and indirect emissions from a Federal action, occurring in a nonattainment or maintenance area, equals or exceeds the annual de minimis levels. In this report, calculated emissions estimates are compared to de minimis levels to evaluate if a conformity determination is needed. The levels circled in red in Table 3 are applicable to this determination.

Table 3: De Minimis Emission Levels (De Minimis, 2016).

Pollutant and Area Designation	Attainment Type	Tons per year[a]
Ozone (VOC and NOx)	Serious nonattainment	50
	Severe nonattainment	25
	Extreme nonattainment	10
	Other areas outside an ozone transport region	100
Ozone (NOx)	Marginal and moderate nonattainment inside an ozone transport region	100

Pollutant and Area Designation	Attainment Type	Tons per year[a]
	Maintenance	100
Ozone (VOC)	Marginal and moderate nonattainment inside an ozone transport region	50
	Maintenance within an ozone transport region	50
	Maintenance outside an ozone transport region	100
Carbon Monoxide, SO_2 and NO_2	All nonattainment & maintenance	100
PM_{10}	Serious nonattainment	70
	Moderate nonattainment and maintenance	100
$PM_{2.5}$ Direct emissions, SO2, NOx (unless determined not to be a significant precursor), VOC or ammonia (if determined to be significant precursors)	All nonattainment & maintenance	100
Lead (Pb)	All nonattainment & maintenance	25

[a] **Rates circled in red are those applicable to this conformity analysis.**

2.1.2 Regional Significance

A Federal action that does not exceed the threshold of rates of criteria pollutants may still be subject to a general conformity determination. The direct and indirect emissions from the action must not exceed 10% of the total emissions inventory for a particular criteria pollutant(s) in a nonattainment or maintenance area. If the emissions exceed this 10% threshold, the Federal action is considered to be a "regionally significant" activity, and thus general conformity rules apply. The concept of regionally significant is to capture those Federal actions that fall below the de minimis emission levels, but have the potential to impact the air quality of a region.

2.2 Analysis

The conformity analysis for the Federal action examines the net impacts of the direct and indirect emissions from mobile and stationary sources, and emissions from any reasonably foreseeable Federal action. Indirect emissions include those emissions the Federal agency can practicably control and has continuing program responsibility to maintain control, and emissions caused by the Federal action later in time and/or farther removed in distance from the action itself, but that are still reasonably foreseeable. Reasonably foreseeable emissions are those from projected Federal actions that can be quantified at the time of the conformity requirements and are included in the analysis.

Reasonably foreseeable emissions analyzed for Westminster Maximum Channel Modifications for the purposes of flood risk management include emissions from:

- Off-road Construction Equipment Engines
- On-road Truck Hauling and Worker Vehicle Trips
- Dust from Grading, Construction, and Driving
- Asphalt Paving

The flood risk management project will not result in new facilities or features that have on-going direct or indirect air emissions, therefore operations and maintenance emissions will not be included and only short-term construction emissions are presented.

2.2.1 Emissions Calculation

CalEEMod

The California Emissions Estimator Model (CalEEMod Version 2016.3.2) is a modeling software supported by the South Coast Air Quality Management District (SCAQMD) that calculates potential emissions from construction and operation of land use projects (CAPCOA, 2017). It calculates the daily maximum and annual average for criteria pollutants as well as annual greenhouse gas (GHG) emissions, and combines user-defined data with default data when site-specific information is not available. It can also incorporate adjustments for mitigation. This model uses widely accepted methodologies for estimating emissions and quantifying air quality and climate change impacts as part of California Environmental Quality Act (CEQA) Environmental Impact Report preparation. In this report, CalEEMod is used to estimate annual emissions of criterial pollutants and compared to de minimis levels to evaluate if a conformity determination is required.

Model inputs include project size, and location, construction schedule and phasing, equipment numbers and activity hours, vehicle mileage, and transported soil and material amounts. This information is derived from project-specific data for Maximum Channel Modifications (USACE, 2018), Orange County Public Works (OCPW) Maximum Channel Modifications project schedule (OCPW, 2018b), and OCPW data used to analyze existing and past portions of the project along channels C04 and C05 (OCPW, 2008; OCPB, 2018a). When data are unavailable, conservative judgements and assumptions are used to develop the modeling scenario, specifications, and inputs to obtain cautious yet realistic screening estimates.

Modeling approach. The model was run considering two broadly defined project types that utilize project-specific data to the greatest extent possible. 'Downstream' soft-bottom reaches (C02 Reach 23, C05 Reach 1) and receiving water features (tide gates, PCH, Warner Avenue Bridge) are characterized by heavy sheet-pile, cement mixing, and excavation work similar to "Draft Initial Study/Mitigated Negative Declaration East Garden Grove-Wintersburg Channel, Warner to 1,250 feet Downstream of Goldenwest Sheet Pile Project" (OCPW, 2018a) and are likely to be constructed concurrently during first years of the project according to the Maximum Channel Modifications Project Schedule (OCPW, 2018b) in order to manage the efficiency and capacity increases upstream. 'Upstream' channel reaches (Reaches 2 – 22 in C04, C05, C06) are characterized by channel shaping, lining, and crossings activities similar to "Mitigated Negative Declaration for the Westminster Channel (C04) from Hoover Street to Beach Boulevard Project" (OCPW, 2008) and are constructed along the channels in series according to the Maximum Channel Modifications Project Schedule" (OCPW, 2018b). The Westminster Mall diversion, a 1.5 mile bypass channel for parts of 'upstream' Reaches 20 and 21 in C04, is the only new section of channel in the project and the only section not explicitly considered during modeling because information regarding this feature was not available at the time of analysis. Because the diversion is only 0.25 miles longer than the bypassed reaches which would no longer be re-constructed, the additional construction is not likely to cause a significant air quality impact. Though detailed activities will vary by reach and downstream feature, the previously evaluated sections of C05 (downstream) and C04 (upstream) are in construction-intensive reaches that are unlikely to underestimate activity for a given project type.

Project location. The project resides in western Orange County, CA. All construction related emissions, including haul trips and worker trips are assumed to occur in Orange County.

Project area. Total acreage of the Maximum Channel Modifications project (233 acres) is obtained from site-specific channel reach data (USACE, 2018) and Google Earth computations of downstream features. The asphalt covered portion of the area (57 acres) is calculated assuming a 15 foot maintenance road

along all channels (both sides for downstream, soft-bottom channels), northbound lanes of PCH, and Warner Avenue Bridge modification.

Construction schedule. Start of construction is January 1, 2020 according to the project schedule developed by OCPW (OCPW, 2018b). The construction period for analysis is assumed to be eight (8) years instead of fifteen (15) years given in the project schedule. A shorter duration was chosen so that peak activity and emissions associated with variation in the project schedule would still be captured by the model. According to the schedule, anywhere from one to eight activities may be under construction in a given year. By compressing the period to eight years, the average number of activities becomes eight and-a-half per year, thus providing confidence that the annual emissions estimates are conservative. Therefore the project is assumed to be completed December 31, 2027.

Construction phases. According to the project schedule, sheet pile projects along soft-bottom channels in C02 and C05 (Reaches 23 and 1) are expected to occur the first three years. Detailed construction schedules have not been developed for downstream modifications, however new tide gates, PCH floodwall, and increasing the span of Warner Avenue Bridge would also need to occur early in the project to manage upstream efficiency and capacity increases. Construction phase names and durations for a section of C05 sheet pile work have already been proposed by OCPW (OCPW, 2018a) and are used here (Table 4). Phases occur in series (with some overlap) and are assumed to be concurrent across soft-bottom channel and downstream projects. Projects are assumed to be concurrent, ending on February 17, 2022 after a slightly over 2-year construction period.

Table 4: Construction phases for C05 Reach 1, C02 Reach 23, and downstream modifications.

Phase Name	Phase Type	Start	End	Days/Week	Total Days
Site preparation of levees, infiltration cistern	Site Preparation	01/01/2020	03/03/2020	5	45
Sheet pile installation	Building Construction	02/01/2020	8/28/2020	5	150
Soil cement mixing, levee work, maintenance road prep	Grading	07/31/2020	05/26/2021	5	214
Pile caps and retaining walls	Grading	05/07/2021	09/23/2021	5	100
Grading/excavation inside the channel	Grading	09/24/2021	11/25/2021	5	45
Asphalt paving of maintenance roads	Paving	11/26/2021	12/16/2021	5	15
Landscaping	Site Preparation	12/17/2021	02/17/2022	5	45

Per the project schedule, the 'upstream' channel projects in C04, C05, and C06 that generally include reshaping, concrete-lining, and crossings (Reaches 2 – 22) are expected to start during the end of 'downstream' channel work and continue through project completion. Construction phase names and duration for a section of C04 channel reconstruction have already been developed by OCPW (OCPW, 2008) and the same phases are used here (Table 5). In contrast to sheet pile projects, projects along each channel occur in series and all phases occur concurrently during the remaining construction period, ending per the compressed construction schedule December 31, 2027.

Table 5: Construction phases for C04, C05, and C06 'upstream' Channel Reaches 2 - 22.

Phase Name	Phase Type	Start	End	Days/Week	Total Days
Removal of existing concrete	Demolition	01/01/2022	12/31/2027	5	1565
Grading/reshape channel from trapezoidal to rectangular	Grading	01/01/2022	12/31/2027	5	1565
Apply asphalt to street improvements	Paving	01/01/2022	12/31/2027	5	1565
Lay concrete in channels	Paving	01/01/2022	12/31/2027	5	1565

Off-road equipment. Detailed equipment lists have not been developed for the current project, however equipment types, numbers, activity (hours/day), horsepower, and load factors were provided for the C04 and C05 projects according to phases of construction (OCPW, 2018a; OCPW, 2008). The same equipment types are used here (Table 6). Equipment numbers have been linearly scaled based on the length (size) of project and the working hours in each phase, then rounded to the next highest whole number.

Table 6: Summary of off-road equipment used to construct Maximum Channel Modifications project.

Off-road Equipment Type	Amount	Hours/Day	Horse Power	Load Factor
Bore/Drill Rigs	10	8	450	0.5
Bore/Drill Rigs	1	7	291	0.75
Cement and Mortar Mixers	10	8	350	0.56
Cement and Mortar Mixers	3	8	10	0.56
Cranes	5	8	231	0.29
Excavator	5	4	350	0.38
Generator Sets	10	8	350	0.74
Graders	4	8	187	0.41
Other Construction Equipment	1	6	190	0.62
Other Construction Equipment	1	7	190	0.62
Pavers	5	8	130	0.42
Pavers	2	7	100	0.62
Paving Equipment	2	7	104	0.53
Plate Compactors	3	7	8	0.43
Pumps	10	8	350	0.74
Rollers	5	8	80	0.38
Rubber Tired Dozers	10	8	350	0.4
Rubber Tired Dozers	10	8	247	0.4
Rubber Tired Dozers	5	1	247	0.4
Rubber Tired Dozers	5	6	247	0.4
Rubber Tired Loaders	5	6	203	0.36
Rubber Tired Loaders	5	7	164	0.54
Tractors/Loaders/Backhoes	5	8	350	0.37
Tractors/Loaders/Backhoes	5	7	108	0.55
Tractors/Loaders/Backhoes	19	8	97	0.37
Tractors/Loaders/Backhoes	5	1	97	0.37
Tractors/Loaders/Backhoes	10	4	97	0.37
Tractors/Loaders/Backhoes	10	6	97	0.37

Acres graded, material movement, demolition amount, haul trips, and worker trips.

The total acreage graded during the Soil Cement Mixing phase (60 acres), Grading/Excavation Inside Channel phase (150 acres), and Grading/Reshape Channel phase (300 acres) is calculated from site-specific area data (USACE, 2018) and tripled to assume three passes with construction equipment.

The amount of dry cement imported during Soil Cement Mixing phase (473,000 cubic yards/498,000 tons) is calculated from the previously developed estimate (OCPW, 2018a) scaled up according to total soft-bottom reach lengths. Haul trips are calculated assuming 20 tons of material per trip times and the return of empty trucks.

The amount of concrete and asphalt removed during Demolition phase (45,000 cubic yards/91,000 tons) is calculated from the previously developed estimate (OCPW, 2008) and scaled up according to total reach lengths that call for removal of concrete. Haul trips are calculated assuming 20 tons of material per trip and the return of empty trucks.

The amount of soil removed from soft-bottom channels and downstream features (680,000 cubic yards) during Grading/Excavation of Inside Channel phase is calculated based on the previously developed estimate (OCPW, 2018a) scaled up according to total soft-bottom reach lengths, plus an additional volume of material computed using Google Earth for Warner Avenue Bridge modification. Haul trips are calculated assuming 16 cubic yards of soil per trip and the return of empty trucks.

The amount of soil removed from Grading/Reshape Channel phase (334,000 cubic yards) is calculated based on the previously developed estimate (OCPW, 2008) scaled up according to total 'upstream' reach lengths. Haul trips are calculated assuming 16 cubic yards of soil per trip and the return of empty trucks.

Number of worker and vendor trips are model defaults, except for sheet pile worker and vendor trips which were scaled up according to soft-bottom channel and downstream feature lengths from previously developed estimates of workers and vendors on-site per day (OCPW, 2018a).

Mitigation. Mitigation for construction equipment and construction dust were considered. All pieces of off-road construction equipment were changed to 'Tier 4' engines that meet more stringent USEPA emission standards than the statewide fleet mix, providing reductions in NOx, VOC, SO2 and PM emissions. The construction site was assumed to be frequently exposed to water (3 times a day) to minimize the release of fugitive dust.

2.2.2 Emission Results

Table 7 presents annual unmitigated criteria pollutant emissions calculated in CalEEMod and compared to de minimis rates. The maximum NOx emission rate is 30 tons/year, three times the de minimis level of 10 tons/year. NOx levels exceed the de minimis threshold all eight years. VOC, CO, SO_2, PM_{10} and $PM_{2.5}$ emissions are well below their respective de minimis pollutant levels.

Table 7: CalEEMod Estimated Emissions with Unmitigated Construction.

	ROG	NOx	CO	SO2	PM10	PM2.5
Year	Tons/yr	Tons/yr	Tons/yr	Tons/yr	Tons/yr	Tons/yr
2020	2.4607	26.8539	15.1999	0.0637	3.1973	1.8772
2021	2.0580	29.8044	15.3469	0.0759	4.1085	2.0492
2022	1.7763	17.7480	16.6210	0.0329	2.7657	1.5556
2023	1.5448	14.7997	15.7831	0.0318	2.2277	1.2072
2024	1.4984	13.9964	15.8667	0.0319	2.1875	1.1663
2025	1.3797	12.5364	15.5547	0.0318	2.0986	1.0862
2026	1.3787	12.5196	15.5488	0.0317	2.0985	1.0861
2027	1.3776	12.5043	15.5433	0.0317	2.0985	1.0861
Maximum Emissions	**2.4607**	**29.8044**	**16.6210**	**0.0759**	**4.1085**	**2.0492**
De Minimis Emission Levels	10	10	100	100	100	100
Conformity Determination Required?	No	**Yes**	No	No	No	No

Estimates were re-calculated in CalEEMod assuming use of Tier 4 engines for off-road construction equipment and watering of construction sites. Results (Table 8) show a significant reduction in NOx emissions (overall percent NOx reduction is 50.6%). NOx emissions are below 10 tons/year all years except 2021, when 20 tons of emissions would still exceed the de minimis threshold. VOC, PM_{10}, and $PM_{2.5}$ levels are also significantly reduced with mitigation. Although CO emissions increase with Tier 4 engine use, they remain well below de minimis levels.

Table 8: CalEEMod Estimated Emissions with Mitigated Construction.

	ROG	NOx	CO	SO2	PM10	PM2.5
Year	Tons/yr	Tons/yr	Tons/yr	Tons/yr	Tons/yr	Tons/yr
2020	1.0429	9.3686	25.0347	0.0637	1.5580	0.7298
2021	1.2304	20.0767	20.0962	0.0759	2.3264	1.0016
2022	0.8998	8.1618	17.9163	0.0329	1.3371	0.6701
2023	0.8306	7.1011	17.2399	0.0318	1.1440	0.5521
2024	0.8118	6.7490	17.3191	0.0319	1.1298	0.5372
2025	0.7578	6.0361	17.0663	0.0318	1.0937	0.5047
2026	0.7567	6.0193	17.0603	0.0317	1.0937	0.5046
2027	0.7557	6.0041	17.0549	0.0317	1.0936	0.5046
Maximum Emissions	**1.2304**	**20.0767**	**25.0347**	**0.0759**	**2.3264**	**1.0016**
De Minimis Emission Levels	10	10	100	100	100	100
Conformity Determination Required?	No	**Yes**	No	No	No	No

Construction emissions in 2021 are associated with Soil/Cement Mixing, Pile Cap, Excavation, Asphalt, and Landscape activities in 'downstream' channel reaches and receiving waters. Table 9 indicates the primary contributors to NOx emissions are the export of excavated soil (11 tons/year) and import of cement (3 tons/year). 'On-road' haul truck emissions are not mitigated in the model since Tier 4 standards apply only to 'off-road' construction equipment. However haul trucks must meet EPA emission standards for heavy-duty highway engines and vehicles, including 0.2 grams of NOx/brake horsepower-hour for heavy-duty highway engines produced after January 1, 2010 (EPA, 2016). Corps of Engineers construction estimates typically assume 3-year old equipment, and age of equipment may be specified for the project. Using trucks built (or repowered with new engines) after 2010, reductions of 7.2 tons NOx/year (or total emissions of 12.9 tons NOx/year) can be achieved in 2021 assuming 300 hp engines and trip lengths of 1 hour (20 miles).

Table 9: CalEEMod Year 2021 On-site* and Haul Truck Emissions with Mitigated Construction.**

	ROG	NOx	CO	SO2	PM10	PM2.5
	Tons/yr	Tons/yr	Tons/yr	Tons/yr	Tons/yr	Tons/yr
Soil/Cement Mixing - On-site	0.413	2.7953	11.151	0.0247	0.198	0.1387
Soil/Cement Mixing - Haul	0.0837	**3.0129**	0.8203	8.6100e	0.3637	0.1015
Pile Caps - On-site	0.1553	1.669	1.9158	3.5700e3	0.2339	0.1299
Excavation - On-site	0.1465	1.2972	2.4469	5.4600e3	0.6239	0.3421
Excavation - Haul	0.3093	**11.141**	3.0332	0.0319	0.7626	0.2325
Asphalt - On-site	0.0867	0.095	0.3212	5.1000e3	4.6600e3	4.3400e3
Landscaping - On-site	6.4200e3	0.0465	0.176	3.0000e3	0.0505	0.0286
Total	1.2	20.1	19.9	0.06	2.2	0.97

*On-site emissions include off-road equipment and fugitive dust emissions.
**Note this table does not include off-site emissions from worker or vendor trips.

Sources of Error

Actual project emissions will vary from CalEEMod estimates due to sources of error within the model and input-related uncertainties, despite best efforts to provide accurate data and valid assumptions. This analysis is based on best-available Westminster Maximum Channel Modifications project data (USACE, 2018) and Orange County Public Works data from existing and past portions of the project (OCPW, 2008; OCPW, 2018a; OCPW, 2018b). Detailed equipment lists and downstream feature designs were not available at the time of this analysis, so cost engineers were consulted to ensure emissions modeling approach and data were consistent with known cost information and assumptions. Individual channel reach data were considered to be representative of other project reaches and downstream features, and were linearly scaled to estimate project equipment numbers, haul quantities, etc. To safeguard against underestimating actual emissions, many assumptions were conservatively applied. The construction schedule (and phases) were compressed to eight years, which would overestimate emissions some years. Mileage for backhaul of empty trucks was supposed rather than phasing material import/export. As noted, vehicle and equipment age are likely to be younger than state averages since Corps of Engineers assume 3-year old equipment. The analysis considers the 'worst-case' Maximum Channel Improvement alternative, which includes some portions that have already been completed by the local sponsor (or will be completed before 2020) but does not include the Westminster Mall diversion because information regarding this feature was not available at the time of modeling. Although actual emissions may vary from those predicted by CalEEMod, they are unlikely to be underestimated due to conservative assumptions used.

2.3 Procedure

Procedural requirements of the conformity rule allow for public review of the Federal agency's conformity determination. Although the conformity determination is a Federal responsibility, state and local air agencies are provided notification and their expertise consulted. In Orange County, CA, the South Coast Air Quality Management District (SCAQMD) has review jurisdiction.

The Federal agency must provide a 30-day notice of the Federal action and draft conformity determination to the appropriate USEPA Region, and State and local air control agencies. The Federal agency must also make the draft determination available to the public to allow opportunity for review and comment. For the Westminster Maximum Channel Modifications Draft Integrated Feasibility Report, the public and agency review process will occur within the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) review framework.

3.0 Conclusions

This General Conformity analysis did not result in a de minimis determination for the Westminster Maximum Channel Modifications Plan. Construction emissions were estimated using CalEEMod software, project-specific data, and conservative modeling assumptions. Emission estimates were found to be de minimis for all criteria air pollutants except NOx. With Tier 4 mitigation of off-road engines, NOx emissions only exceed the de minimis threshold in year 2021. If new haul trucks (built or repowered with new engines after 2010) are used in 2010, NOx emissions are estimated to be around 12.9 tons/year but still exceed the de minimis level of 10 tons NOx/year. Based on these findings, additional emission reductions must be achieved or the project requires a conformity determination. This determination is subject to review by state and local authorities, and also by the public. This will take place as part of the Draft Environmental Impact Report (EIR) review, which will allow an opportunity for review and comment by interested parties.

Additional mitigation measures and environmental commitments are being considered as part of the CEQA Draft EIR to minimize impacts to air quality during construction. If these measures, or a reevaluation of modeling data and assumptions, do not show total project emissions are below de minimis emission thresholds, a General Conformity determination is required. The SCAQMD has adopted a series of Air Quality Management Plans to meet national and state air quality standards. To ensure conformity with these plans, the SCAQMD is consulted and an additional air quality analysis for conformity determination required. Westminster Maximum Channel Modifications project would temporarily decrease air quality in Orange County by increasing emissions from construction equipment, material movement, fugitive dust, and paving activities, however the resulting project will reduce mobile emissions in the region by decreasing congestion and traffic delays and congestion caused by flooding.

4.0 References

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