Addendum

to the

Final Environmental Impact Report for the Aliso Canyon Turbine Replacement Project

(State Clearinghouse No. 2010101075)[1]

October 2014

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[1] The Aliso Canyon Turbine Replacement Project Final Environmental Impact Report (FEIR) incorrectly lists State Clearinghouse No. 2010062025. The number identified for this Addendum (No. 2010101075) is also the correct State Clearinghouse number for the Aliso Canyon Turbine Replacement Project FEIR.

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Attachments

1 Southern California Edison 66-kV Subtransmission Line and Natural Substation Map Sheets

2 Updated Petition for Modification Attachment B, Appendix A, "Air Quality and Greenhouse Gas Calculation Sheets" (10/30/14)

1.0 Introduction and Project Background

In accordance with Decision 13-11-023 (issued November 22, 2013), the California Public Utilities Commission (CPUC) acting as lead agency, certified and adopted the Environmental Impact Report (EIR), adopted the Mitigation, Monitoring, Compliance and Reporting Program (MMCRP) as included in Section 5 of the Final EIR (FEIR), and granted the applicant, Southern California Gas Company (SoCalGas or the applicant), a Certificate of Public Convenience and Necessity for the Aliso Canyon Turbine Replacement Project (ACTR Project or the project). Pursuant to CPUC General Order 131-D, Section XI, Subsection B.4 of the Construction of Facilities that are exempt from a Permit to Construct, Southern California Edison (SCE) filed Advice Letter 3067-E on June 30, 2014, which became effective on August 1, 2014 (SCE 2014a). The Advice filing allows for construction and operation of SCE's components of the ACTR Project.

The FEIR for the ACTR Project analyzed the environmental impacts of expanding the Aliso Canyon Natural Gas Storage Field's (storage field's) natural gas injection capacity from approximately 300 million standard cubic feet per day to approximately 450 million standard cubic feet per day. The FEIR assessed the construction of SoCalGas infrastructure required for the expansion, including a new central compressor station, guardhouse and office buildings, as well as components that would be constructed or modified by SCE, including installation of new telecommunications lines, upgrades to existing 66-kilovolt (kV) subtransmission infrastructure and associated access roads, construction of Natural Substation, and upgrades to existing substations.

SoCalGas and SCE jointly submitted an application (A.09-09-020) to the CPUC for a Petition for Modification (PFM) of Decision 13-11-023 on September 11, 2014 (SoCalGas and SCE 2014). This Addendum to the FEIR for the ACTR Project analyzes the following changes to the project proposed in the PFM:

- Minor modifications to an Applicant Proposed Measure (APM) and four mitigation measures (MMs) (Section 3.1 of this Addendum, "Proposed MMCRP Modifications");
- Minor modifications to several SCE 66-kV subtransmission line structures (Section 3.2 "Proposed Modifications to SCE's 66-kV Subtransmission Line Structures"); and
- Minor modifications to SCE subtransmission line access roads and work sites as determined during final engineering (Section 3.3 "Proposed Modifications to SCE Subtransmission Line Access Roads and Work Sites").

2.0 Authority for the Addendum

This Addendum describes the proposed modifications to the ACTR Project and provides the additional analysis required to adequately address the proposed modifications pursuant to Public Resources Code Section 21166 and the Guidelines for California Environmental Quality Act (CEQA) Section 15000, California Code of Regulations Title 14, Chapter 3 (CEQA Guidelines). As the lead agency, the CPUC has the authority to approve amendments to Decision 13-11-023, including amendments to the certified EIR and MMCRP.

Pursuant to CEQA Guidelines §15164 an Addendum to a certified EIR shall be prepared if only minor technical changes or additions are necessary. In addition, pursuant to CEQA Guidelines §15162, preparation of an Addendum to an EIR is appropriate unless subsequent changes are proposed to the project, physical circumstances have changed on the subject property, or new information of substantial importance becomes available and this results in new significant impacts or a substantial

increase in the severity of previously identified significant impacts. The addendum need not be circulated for public review (CEQA Guidelines §15164[c]); however, an addendum is to be considered by the decision maker prior to making a decision on the project (CEQA Guidelines §15164[d]).

As shown in the following analysis, the proposed modifications to the ACTR Project would not result in any of the conditions that would require preparation of a subsequent or supplemental EIR (Public Resources Code Section 21166, CEQA Guidelines Sections 15162 and 15163). The analysis concludes that, with the implementation of previously identified APMs and adopted MMs defined in the MMCRP, impacts of the proposed additions would be minor and less than significant. Thus, the proposed additions are sufficiently addressed in an addendum to the FEIR.

3.0 Description of the Proposed Modifications

3.1 Proposed MMCRP Modifications

3.1.1 Applicant Proposed Measure BR-4

In a comment letter submitted on the Draft EIR, the applicant requested a revision to APM BR-4 to allow construction to proceed within suitable coastal California gnatcatcher habitat if that habitat was shown to be unoccupied by this species through protocol-level surveys, or if the applicant could maintain a buffer of 500 feet from any active gnatcatcher nest. The applicant's requested revision was inadvertently not included in the FEIR. However, during consultation with the United States Fish and Wildlife Service (USFWS) regarding this proposed change to APM BR-4, Chris Dellith of USFWS requested that language be added to the measure to protect coastal California gnatcatcher breeding territories. In his letter, Mr. Dellith noted that the loss of any portion of a territory could result in take of this species. To address this comment, language was added that requires the applicant and SCE to maintain a 500-foot buffer from the edge of a coastal California gnatcatcher's breeding territory (which can be several acres in extent) instead of maintaining a 500-foot buffer from the nest itself. The revised language for this APM includes the applicant's requested revision, USFWS's requested revision, and additional language clarifying the conditions under which it would be appropriate to conduct construction activities in gnatcatcher habitat.

APM BR-4: Preconstruction Gnatcatcher Surveys.
The applicant and SCE will ensure that protocol-level pre-construction surveys will be conducted for coastal California gnatcatcher, in project component areas where suitable habitat exists in accordance with the U.S. Fish and Wildlife Service Coastal California Gnatcatcher (Polioptila californica californica) Presence/Absence Survey Guidelines, February 28, 1997 (protocol). In the event that coastal California gnatcatcher are observed in pre-construction surveys~~, a buffer of 500 feet from any active nest will be flagged and maintained by a biological monitor~~ a qualified biologist must identify the boundaries of the pair's territory and the applicant and SCE must not conduct construction activities within 500 feet of the territory. If infeasible to maintain a buffer of 500 feet from an active gnatcatcher ~~nest~~ territory, ~~work~~construction activities within or near these areas will be performed outside of the breeding and nesting season (coastal California gnatcatcher breeding/nesting season is approximately February 15 through August 30), or the applicant must consult with USFWS to determine alternative actions. Areas of 2 or more contiguous acres of suitable coastal California gnatcatcher habitat will be identified at the time of pre-construction surveys.~~,~~ The applicant and SCE may conduct construction activities in gnatcatcher habitat during the breeding and nesting season if protocol-level surveys (conducted no later than one year prior to construction activities per protocol) confirm the absence of breeding gnatcatchers, or if the 500-foot protective buffer from all active gnatcatcher territories can be maintained. ~~and work within or near these areas will be performed outside of the breeding and nesting~~

~~*season (coastal California gnatcatcher breeding/nesting season is approximately February 15 through August 30).*~~

Proposed modifications to APM BR-4 would not decrease the protection of this species afforded by this APM. Furthermore, by incorporating USFWS's comment, the new language would increase protection of this species in occupied habitat.

3.1.2 Mitigation Measure BR-5

Most non-modified seasonal drainages in Southern California have dry periods, during which they do not hold water. To protect water quality and prevent the introduction of pollution and anthropogenic materials into such drainages, MM BR-5 requires that construction near such hydrological features take place only during a dry period. However, SCE has since determined that the drainage adjacent to tubular steel pole (TSP) 11 perennially contains water because it receives flow from urban, non-point sources on a continuous basis. Therefore, conducting work in such a drainage during a dry period is not feasible. The following modifications to MM BR-5 would provide a means of protecting the water quality of drainages such as the one identified by SCE, while allowing work to proceed when water is present.

MM BR-5: Impacts on Hydrologic Features. *Prior to project construction, for all proposed project components in the vicinity of hydrologic features, the applicant and SCE will:*

1. *Complete formal delineations per USACE protocols to confirm and determine the extent of jurisdictional wetlands present in the proposed project areas;*
2. *Consult with the USACE and CDFW to determine whether CWA Section 404 permits and California Department of Fish and Game Code Section 1600 Streambed Alteration Agreements are necessary for the proposed project, apply for these permits as needed, and determine the area of fill that would require compensation;*
3. *Commit to compensatory mitigation for any wetland fill per any required permits and in consultation with USACE and CDFW (wetland fill requiring mitigation will be compensated for at a minimum ration of 0.5:1, or 0.5 acres of wetland creation or restoration for every 1 acre of wetland fill caused by the proposed project); and*
4. *Ensure that biological monitors establish and maintain a minimum exclusionary buffer of 50 feet from the delineated extent of all jurisdictional wetland features during project construction.*

Construction of any proposed project component that requires altering, removing, or filling the bed or bank of seasonal drainages, or other jurisdictional or potentially jurisdictional water feature~~, and/or cannot maintain the 50-foot exclusionary buffer,~~ will be performed only when water is not present in the feature, unless otherwise allowed by the USACE and CDFW within the conditions of any respective permits and/or authorizations including the conditions of the SWPPP. If the applicant or SCE cannot maintain the 50-foot exclusionary buffer from the bed or bank of a drainage feature during project construction, the applicant or SCE will submit BMPs as outlined in the SWPPP to CPUC staff for review and approval prior to construction.

The proposed modifications to MM BR-5 would not result in a reduced level of protection to either biological resources or water because the applicant and SCE would still be required to implement best management practices (BMPs), as outlined in the Stormwater Pollution Prevention Plan (SWPPP), to reduce any potential impacts on water quality if a 50-foot exclusionary buffer from the bed or bank of the drainage feature cannot be maintained.

3.1.3 Mitigation Measure BR-15

The Draft EIR contained language that seemed to indicate that the applicant and SCE were required to obtain a permit for the removal of oak trees from any city or county in which oak trees would be removed. However, in a comment letter on the Draft EIR, the applicant indicated that the project would be exempt from obtaining such permits under CPUC General Order 131-D, and requested that the text be removed and replaced with an appropriate MM. In response to this comment, the CPUC prepared MM BR-15 in the FEIR.

The City of Santa Clarita, Los Angeles County, and Ventura County Oak Tree Ordinances were used as general guidance in creating MM BR-15. Each municipality maintains different guidelines for the protection of oak trees. The CPUC has since determined that some requirements do not represent an ecologically optimal plan for oak tree replacement plantings for the project because the requirements in the municipal ordinances are intended to cover oak trees in urban areas and may not be feasible for addressing oak removal in a wildlands setting.

These proposed revisions to MM BR-15 are based on criteria or guidance more appropriate to the project and input provided by a qualified arborist. Specific changes are justified as follows:

- Based on a review of the scientific literature and the three local ordinances, the required replanting ratio of 5:1 was reduced to 4:1, because this is a more appropriate, yet still conservative, ratio for replacement of oak trees of this size (a trunk of 8 inches or more in diameter at 4.5 feet diameter and breast height) or larger in wildland settings.
- Instead of requiring replacement oaks to be of a certain size, suggested revisions to the MM would allow the seedling size to be left to the discretion of the qualified arborist, to achieve better, site-specific planting success. Large oak seedlings (i.e., those planted in 15-gallon containers) may have more difficulty adjusting to onsite existing conditions than smaller seedlings, and requiring the applicant to plant larger seedlings could result in higher seedling mortality.
- Language was added to allow the applicant to perform mitigation on-site, off-site, or through the purchase of mitigation lands. Due to the number of oak trees needed for mitigation and the limited space onsite to plant replacement trees, these changes ensure that oak tree restoration is both feasible and implemented using the best available mitigation options.
- No revisions were made to the 5-year monitoring period. This monitoring period is appropriate, as indicated by a literature review of oak tree restoration techniques. For example, Bernhardt and Swiecki (2001) indicate that "growth rates of juvenile oaks vary by species and with site conditions, but a minimum of 5 to 10 years of protection is typically needed to recruit juvenile oaks to a size class for which further protection is unnecessary."
- The tree replacement success rate was revised from 100 percent to 75 percent. A success rate of 100 percent may be appropriate for an urban setting, but a 75 percent success rate is more appropriate, and sufficiently high, for a wildlands setting. The success rate of 100 percent was based on the most stringent of the three municipal oak tree ordinances used to develop the original MM.

MM BR-15: Restoration of Native Oak Trees:

~~Consistent with City of Santa Clarita, Los Angeles County, and Ventura County policies and guidance addressing trees of the oak genus,~~ T~~t~~he applicant and SCE will take measures to avoid and minimize impacts to oak trees resulting from project construction activities, and will ~~plant replacement trees in compensation~~ fully mitigate for any trees damaged or removed. The applicant and SCE will prepare oak tree evaluation surveys and oak tree ~~replacement~~ mitigation plans prior to construction, and, after the completion of final engineering design of the project elements, the applicant and SCE will complete pre-

construction surveys, and submit survey results to CPUC staff, to identify all individual trees of the oak genus indigenous to California located in the proposed project component areas. Oak trees will be identified by a qualified arborist, (i.e., an arborist with extensive local or regional expertise in the planting, care and maintenance of oak trees), who will record a brief description of each tree (height, width, ~~approximate age,~~ condition, and species). All construction activities that take place within the driplines of oak trees (i.e., the outermost extent of the canopy) that have the potential to damage or result in the removal of oak trees (e.g., more than 25 percent trimming of any individual oak tree canopy during one growing season, excavation or paving near oak trees, oak tree removal) will be monitored by a qualified arborist. Trimming, damage to, or loss of oak trees within the project construction areas shall not occur until the trees are evaluated by a qualified arborist, who shall identify appropriate measures to minimize tree loss which may include the placement of fencing around the dripline, padding construction vehicles, or the placement of protective covering (matting) under the existing dripline during construction activities. If construction activities would lead to damage or the removal of any oak tree with a trunk of 8 inches or more in diameter at 4.5 feet ("breast height"), the tree will be replaced at a 4~~5~~:1 ratio.

Oak tree mitigation may be comprised of on-site or off-site planting of oak trees at the prescribed mitigation ratio (4:1) or through the purchase of mitigation bank credits from an approved mitigation bank. If a mitigation bank is utilized, the credit purchase shall equal the total area required for mitigation for the impacts (i.e., sufficient credits to meet or exceed the area needed for 4:1 replacement of impacted individual trees). The oak tree ~~replacement~~ mitigation plans that will be submitted by the applicant and SCE to CPUC staff for review and approval prior to construction will include, at a minimum:

1. *The estimated number of trees that will be damaged or removed during project construction;*
2. *Specific planting details (e.g., size of saplings, size of containers, proposed planting depth, and watering regimes;*
3. *Specific protection measures (e.g., measures to prevent damage to replacement oak tree plantings from animals and other sources);*
4. *Success criteria;*
5. *Monitoring and maintenance schedule; and*
6. *Proposed planting locations with specific baseline information on existing soil types, existing tree and shrub density, and proposed oak tree planting density and spacing.*

Replacement tree planting will be monitored by a qualified arborist, who will ensure the implementation of the following:

1. *Planting of r~~R~~eplacement trees will occur ~~will be initially planted in 15 gallon containers, and then permanently planted~~in suitable areas ~~deemed suitable by the arborist~~. The planting of replacement oak trees may occur on-site or off-site;*
2. *Replacement trees will be monitored for 5 years after initial planting for survivability (pursuant to a monitoring schedule established by the arborist); after the 5-year period, the arborist will evaluate whether the trees are capable of surviving without further maintenance;*
3. *Other measures determined necessary by the arborist to ensure the success of ~~all (100~~at least 75 percent~~)~~ of tree replacement plantings.*

Tree removal shall not be permitted until replacement trees have been planted or ~~transplanting~~ mitigation sites are approved by the CPUC staff.

The proposed modifications to MM BR-15 would not reduce the level of protection for oaks. The changes eliminate potentially ineffective seedling size restrictions and allow for a more comprehensive range of mitigation options. While the replacement ratios and success criteria were reduced, the new

parameters are more applicable to the project's environmental setting based on a comprehensive literature review, improve the feasibility of the replacement strategy as a whole, and are similar to success criteria outlined in the municipal ordinances on which the original measure was based.

3.1.4 Mitigation Measure NS-3

MM NS-3 is intended to control operational noise from the compressor station, which may increase as a result of the project. The applicant has indicated that the withdrawal system is completely separate from the compressors. Additionally, the withdrawal system is not part of the project and no withdrawal rate increases are anticipated or proposed as part of the project. Therefore, only the injection activities are relevant. The following modification to MM NS-3 is proposed to clarify that noise monitoring is only needed for injection operations, and not for withdrawal activities.

MM NS-3: Operational Noise Control. *After construction of the Central Compressor Station is completed, the applicant will take measures as necessary to ensure that the operational noise levels from the Central Compressor Station do not exceed 45 dBA at the closest receptor in the City of Los Angeles. Measures that may be implemented to achieve this level during the operational phase for turbines, compressors, and cooling equipment proposed to be installed at the Central Compressor Station could include:*

1. *Turbines will be placed within an acoustical enclosure;*
2. *Compressor noise will be mitigated by placing an acoustical blanket over the compressor itself or enclosing the compressor within an appropriately rated acoustical building;*
3. *Noise emitted from gas process coolers will be mitigated by installing acoustic barriers without gaps around the equipment casing and with a continuous minimum surface density of 10 kilograms per square meter in order to minimize the transmission of sound.*

In order to ensure that operational noise levels from the Central Compressor Station do not exceed 45 dBA at the closest receptor in the City of Los Angeles, the applicant will conduct noise surveys to measure noise levels at the location of the closest receptor in the City of Los Angeles (or a public location near this receptor and between the receptor and the storage facility site) during conditions when operations at the Central Compressor Station produce the highest noise levels (i.e., during time periods when gas injection ~~and withdrawal~~ are taking place at the maximum rate). Noise surveys will be conducted during initial start-up and testing of the Central Compressor Station, and as needed to confirm that plant operations and any required mitigation reduce operational noise to less than 45 dBA at the closest receptor in the City of Los Angeles.

The proposed modifications to MM NS-3 would not result in a reduced level of protection with regards to noise because no anticipated withdrawal rate increases are anticipated or proposed as part of the project.

3.1.5 Mitigation Measure HZ-2

MM HZ-2 reduces potential impacts on people or structures as a result of exposure to a significant risk involving wildland fires. To address this potential impact, HZ-2 requires the applicant and SCE to develop fire control and emergency response measures as part of the Construction Safety and Emergency Response Plans for construction of the project. The measure outlines specific elements that must be included in the plan. However, the applicant and SCE have indicated that certain requirements outlined in the MM are infeasible as written, require additional clarification, or present potential liability to the applicant and SCE for impacts associated with fires unrelated to the project. Therefore, the following modifications to MM HZ-2 are proposed:

MM HZ-2: Construction Fire Control and Emergency Response Measures. *To address the risk of fire during construction of the proposed project components, the applicant and SCE will develop fire control and emergency response measures as part of the Construction Safety and Emergency Response Plans developed in consultation with their contractors for use during construction of the proposed project components. The Construction Fire Control and Emergency Response Measures will describe fire prevention and response practices that the applicant and SCE will implement during construction of the proposed project components to minimize the risk of fire, and, in the case of fire, provide for immediate suppression and notification. SCE's Construction Fire Control and Emergency Response Measures will also be generally consistent with SCE's Specification E-2005-104, Transmission Line Project Fire Plan (February 21, 2006), and SCE's fire prevention plan prepared pursuant to CPUC Decision 12-01-032.*

The Construction Fire Control and Emergency Response Measures shall specify that the applicant and SCE, or the respective construction contractors, shall furnish all supervision, labor, tools, equipment, and material necessary to prevent starting any fire, control the spread of fires if started, and provide assistance for extinguishing fires started as a result of project construction activities. Labor shall include the assignment of Fire Risk Managers who will be present at each proposed project component area during construction activities, whose sole responsibility will be to monitor the contractor's fire-prevention activities, and who will have full authority to stop construction in order to prevent fire hazards. If construction activities take place concurrently at more than one project component area, and such areas are close by in proximity (e.g., within the storage field area), one Fire Risk Manager may monitor more than one project component area during the same period of construction.

1. *The Fire Risk Managers shall:*

    a) *Be responsible for preventing, detecting, controlling, and extinguishing fires set accidentally as a result of construction activity;*
    b) *Review the Fire Control and Emergency Response Measures with ~~the fire patrolperson and~~ construction employees prior to starting work at each project area;*
    c) *Ensure that all construction personnel are trained in fire safety measures relevant to their responsibilities. At a minimum, construction personnel shall be trained ~~and equipped to extinguish small fires;~~ in incipient stage fire prevention, control, and extinguishing (e.g., the fire can be controlled or extinguished by portable fire extinguishers, small hose systems, or portable water supplies without the need for protective clothing or breathing apparatus), and fire reporting. Each member of the construction crew shall be trained and equipped to extinguish small fires;*
    ~~f). Be equipped with radio or cell phone communication capability; and~~
    d) *Ensure that no personnel shall fight a fire beyond the incipient stage and/or after the arrival of professional fire suppression personnel (local Fire Departments of CAL FIRE personnel);*
    e) *Ensure that Fire Risk Manager and all construction crews are provided with radio and cellular telephone access that is operational within each project area to allow for immediate reporting of fires, by ensuring that communication pathways and equipment are tested and confirmed operational each day prior to initiating construction activities at each project component area; and*
    f) *Maintain an updated key personnel and emergency services contact (telephone and email) list, kept onsite and made available as needed to construction personnel.*

2. *Equipment shall include:*

    a) *Spark arresters that are in good working order and meet applicable regulatory standards for all diesel and gasoline internal combustion engines, stationary and mobile;*

b) One shovel and one pressurized chemical fire extinguisher for each motorized vehicle or each gasoline-powered tool (if not accompanied by a motorized vehicle), including but not restricted to compressors, hydraulic accumulators, gardening tools (such as chain saws and weed trimmers), soil augers, rock drills, etc.;
c) Fire suppression equipment to be kept on all vehicles used for project construction; and
d) An onboard ~~self-extinguishing~~ fire ~~suppression system~~ extinguisher capable of extinguishing any equipment-caused fire to be kept on heavy construction operating equipment.

3. Measures to be undertaken by the applicant, SCE or the respective construction contractors, and monitored and enforced by the Fire Risk Manager, at each of the project areas during construction activities, shall include:

a) The installation of fire extinguishers at the proposed Central Compressor Station site;
b) The prohibition of smoking at each construction job site as follows: no smoking in wildland areas; no smoking during operation of light or heavy equipment; limit smoking to paved areas or areas cleared of all vegetation; no smoking within 30 feet of any area in which combustible materials (including fuels, gases, and solvents) are stored; no smoking in any project construction areas during any Red Flag Warnings that apply to the area;
c) The posting of no smoking signs and fire rules on the project bulletin board at all contractor field offices and areas visible to employees during fire season;
d) The maintenance of all construction areas in an orderly, safe, and clean manner. All oily rags and used oil filters shall be removed from project construction areas. After construction activities are completed in each project area, the area shall be cleaned of all trash and surplus materials. All extraneous flammable materials shall be cleared from equipment staging areas and parking areas;
e) Confinement of welding activities to cleared areas having a minimum radius of 10 feet measured from place of welding, and observed by the Fire Risk Manager;
f) Prevention of the idling of vehicles with hot exhaust manifolds on dirt roads with dead combustible vegetation under the vehicle;
g) The provision of portable communication devices (i.e., radio or mobile telephones) as needed to construction personnel and communication protocols for onsite workers to coordinate with local agencies and emergency personnel in the event of fire or other emergencies during construction or operation of the proposed project; ~~and~~
h) Ensuring that at least one crew member is within 100 yards at all times of a vehicle containing equipment necessary for fire suppression as outlined above;
i) The immediate reporting of all fires to the Fire Risk Manager in the project component area; and
j) Any additional measures as needed during construction to address fire prevention and detection, to lower the risk of wildland fires.

4. Measures will also include the following requirements that would involve coordination between the applicant and SCE, and the Fire Departments and CAL FIRE:

a) The applicant's and SCE's respective Fire Risk Managers shall serve as liaisons to the Fire Departments and CAL FIRE during the project's construction ~~contractors shall furnish any and all forces~~ phase and ~~equipment to extinguish any uncontrolled~~ provide a point of contact for the Fire Departments and CAL FIRE in the event of a fire ~~near the project component areas as directed by Fire Department or CAL FIRE representatives~~ emergency;
b) The applicant and SCE or the respective construction contractors shall abide by all restrictions to construction activity that may be enforced by the Fire Departments and/or CAL FIRE during Red Flag Warning days; and

c) In the event that SCE or their construction contractor sets fire to incinerate cleared vegetation, the Fire Risk Manager shall notify the Fire Departments and/or CAL FIRE in advance of the burning. Special care shall be taken to prevent damage to adjacent structures, trees, and vegetation. The applicant will not burn cleared vegetation during construction activities.

5. Measures will also include additional, special provisions for days when the National Weather Service issues a Red Flag Warning. Standard protocols implemented during these periods will include:

a) Measures to address storage and parking areas;
b) Measures to address the use of gasoline-powered tools;
c) Procedures for road closures as necessary;
d) Procedures for use of a fire guard as necessary; and
e) Additional fire suppression tools and fire suppression equipment, and training requirements

The proposed modifications to MM HZ-2 would still require the applicant and SCE to prevent, control, and extinguish fires caused as a result of project-related activities. However, they clarify that once the fire is past the incipient stage (i.e., when it would present a significant safety risk to workers) or after the arrival of professional fire personnel, construction personnel would cease fire fighting activities and professional fire personnel would assume fire-fighting responsibilities. In the event that this occurs, the Fire Risk Managers, who are employed by the applicant or SCE, would serve as liaisons to the local Fire Department and California Department of Forestry and Fire Protection (CAL FIRE), consistent with SCE's exiting Fire Prevention Plan. In addition, it clarifies that one Fire Risk Manager may monitor more than one project component area at a time if the areas are close in proximity and that if any gas powered equipment is being used by construction staff and no motorized vehicle is present, a shovel and fire extinguisher must be readily available in order to use that individual piece of power equipment.

The proposed modifications to MM HZ-2 would not result in a reduced level of protection for persons or structures that may be exposed to wildland fires.

3.2 Proposed Modifications to SCE's 66-kV Subtransmission Line Structures

In the EIR, it was assumed that 64 structures would be removed and 78 TSPs installed along the 66-kV subtransmission line routes. It was assumed that the TSPs would range in height from 55 to150 feet but that the final heights would be determined during final engineering (CPUC 2013). SCE now proposes to remove 57 structures and install 51 TSPS.[2,3] Fewer structures would be installed because a greater number of the TSPs would be on the taller end of the range analyzed in the EIR, which allows for greater spans between structures. Structure location changes that extend beyond the corridor surveyed and analyzed in the EIR and require new right-of-way (ROW) are summarized in Table 3-1. The modifications are discussed further in sections 3.2.1 to 3.2.4, below.

[2] Structures estimates are based on 90 percent completion of SCE's engineering design plans as of September 2014.
[3] The structures evaluated in this Addendum do not include three TSPs to be installed at San Fernando Substation (TSPs SF-1to SF-3) and five TSPS to be in proximity to Natural Substation (TSPs 45–49). No changes to these structures have been proposed.

Table 3-1 Proposed Modifications to 66-kV Subtransmission Line Structure Locations

Area	Modified Structure Location
Tap-Point Area East of I-5 [1]	• Install one tubular steel pole (TSP) at a location not considered in the Environmental Impact Report (EIR) (TSP 32). • Obtain new right-of-way (ROW) for approximately 2,400 feet of Segment A of the subtransmission line approximately 300 feet northeast of the current alignment, and obtain new ROW for approximately 600 feet of Segment B of the subtransmission line approximately 150 feet southeast of the current alignment. • Build a new 200-foot spur road to access TSP 32. • The existing tap point would be relocated approximately 200 feet south from a structure to be removed to proposed TSP 34 but would remain within existing ROW.
Southwest of Sunshine Canyon Landfill	• Install TSPs 38, 39, 40, and 41at locations not considered in the EIR that are closer to existing access roads. • Obtain new ROW for 1,000 feet of Segment C of the subtransmission line up to 150 feet northwest of the current alignment.
Adjacent to Storage Field's Eastern Boundary	• Install TSP 43 at a location not considered in the EIR (approximately 173 feet southwest to a location along an existing access road). • Obtain new ROW for approximately 50 feet of Segment C of the subtransmission line approximately 130 feet southeast of the current alignment.

Source: SoCalGas and SCE 2014
Note: [1] The term *tap* or *tap point* refers to the location where two transmission lines interconnect. A tap point is commonly located on a single transmission structure (e.g., as proposed at TSP 34).

3.2.1 Tap-Point Area East of I-5

SCE has determined that construction of the project within the existing alignment analyzed in the EIR near the tap point east of Interstate 5 (I-5) presents the following challenges: 1) construction and ongoing maintenance would require use of a helicopter and hand construction, or development of spur roads, because there is either no access or restricted road access to the locations analyzed in the EIR and 2) construction would present potential safety challenges because of the terrain and the current locations of the existing structures.

Therefore, SCE proposes to reroute approximately 2,400 feet of Segment A from TSP 31 to TSP 32 to TSP 34 (the tap pole) to an area up to approximately 300 feet northeast of the current alignment. In addition, SCE proposes to reroute approximately 600 feet of Segment B between TSP 34 and TSP 33 approximately 150 feet southeast of the current ROW. These reroutes would require the acquisition of new ROW from the same private landowner who owns the land associated with the existing alignment. TSP 32 would be installed in the new alignment (see PFM Attachment B, Figures 2.2-1a and 2.2-1b, "Tap Location Realignment").

The proposed modification would also require the construction of a new 200-foot spur road for access to TSP 32 for construction and operations. FEIR, Appendix A, Section 2.2.10, "Access Roads," identified that new 18-foot wide access roads along the 66-kV reconductoring routes would be constructed where new structures would be installed no structure was previously present. This proposed road to TSP 32 fits this description; however, it is outside the area that was surveyed and analyzed for the EIR.

This proposed reroute would reduce the total temporary and permanent disturbance area of the proposed 66-kV subtransmission line component because the proposed TSP locations along the rerouted alignment are closer to the existing access road, and thus the spur roads to the rerouted structures would be shorter overall than the spur roads necessary to access locations in the existing alignment (if helicopters were not used). In addition, this reroute would allow better access for construction as well as operations and maintenance. The potential impacts associated with the new spur road are assessed in Section 4 of this

Addendum, "Evaluation of Proposed Changes to the Aliso Canyon Turbines Replacement Project." No changes are anticipated to the proposed workforce for the Tap realignment.

3.2.2 Southwest of Sunshine Canyon Landfill

FEIR Appendix A, Section 2.2.7.3, states that the 66-kV subtransmission route in the area of the Sunshine Canyon Landfill (Segment C) "would be relocated from the current alignment within the landfill to a location that runs along the outer perimeter of the disturbed area of the landfill, within the County of Los Angeles" (CPUC 2013). However, due to difficult terrain and restricted access to the existing structure locations, SCE proposes to reroute a portion of the subtransmission line in the vicinity of the existing M14-T2, -T3, and -T4 structures (Segment C west of the Sunshine Canyon Landfill) to provide for improved access for TSP construction and ongoing maintenance.

This reroute would deviate from the existing alignment for approximately 1,000 feet in length, and would require SCE to obtain a new ROW from the County of Los Angeles, who also owns the land for the existing alignment. The new TSPs 38, 39, 40, and 41 would be installed less than 150 feet northwest of the existing alignment (refer to the map sheets provided in Attachment 1 to this Addendum). The realignment would reduce the temporary and permanent disturbance areas because the TSPs would be relocated to areas closer to the existing access road, eliminating the need to extend existing spur roads, as proposed in the FEIR, and eliminating the need for a crane pad adjacent to TSP 41. The anticipated construction equipment and workforce to complete this realignment would be consistent with the equipment and workforce assessed in the ACTR Project's certified EIR.

3.2.3 Adjacent to Storage Field's Eastern Boundary

Based on geotechnical investigation results, SCE proposes to install TSP 43 approximately 173 feet southwest of the location originally proposed, to a location along an existing access road. The new location was not considered in the FEIR. This change in location would deviate from the existing alignment and would require SCE to obtain a new ROW up to approximately 130 feet southwest of the current ROW. The anticipated construction equipment and workforce to complete this relocation would be consistent with the equipment and workforce assessed in the ACTR Project's certified EIR.

3.2.4 Additional Minor Modifications

Several additional minor modifications to the locations of 66-kV subtransmission line components evaluated in the FEIR are proposed by SCE, but the components and associated work would still occur within the ROW surveyed and analyzed in the FEIR. The changes in location are generally between 5 and 30 feet from those identified in the FEIR (see Attachment 1 to this Addendum). For example, TSPs 31 and 33 would be moved by less than 20 feet and TSP 42 by about 5 feet. An H-frame structure would be removed near the proposed site for TSP 34 as discussed in the FEIR, but an additional steel utility pole located adjacent to the H-frame structure would also be removed (Attachment 1). SCE proposes to move TSP 18 approximately 100 feet east-southeast to a location along an existing access road. These changes would not occur in locations outside the corridor already surveyed and analyzed in the FEIR and would not require new ROW. Therefore, these minor modifications are not considered further in this Addendum.

3.3 Proposed Modifications to SCE Subtransmission Line Access Roads and Work Sites

The EIR proposed the construction of access roads and related features (e.g., retaining walls and stormwater control devices) for the project but provided little detail on number and location. The EIR primarily surveyed areas within SCE's ROW for the existing 66-kV subtransmission line, thus most of the specific locations proposed for access road work and associated road features were not included in the EIR. Specific locations outside the existing 66-kV subtransmission line ROW have since been identified and surveyed by SCE to reflect their proposed modification to the project area, and survey results are presented in the Habitat Assessment (PFM Attachment C). In addition, specific locations of road and associated feature disturbance areas are presented in Attachment 1 to this Addendum.

Access Roads and Work Sites

The following modifications to access roads and work sites for the 66-kV subtransmission line are proposed:

- Widening of existing access roads in a number of locations not analyzed in the EIR;
- One new road constructed in a location not analyzed in the EIR (identified above in Section 3.2.1, "Tap-Point Area East of I-5"); and
- Identification of permanent and temporary crane pad site; temporary wire-pulling, tensioning, and splicing site; and temporary structure work site locations not specified in the EIR.

The FEIR stated that access road activities would include the construction of new and rehabilitation of existing access roads for the 66-kV subtransmission line reconductoring. The FEIR, Appendix A, Section 2.2.10, "Access Roads," proposed the installation of new access roads along the 66-kV subtransmission line to reach new structures where no structure existed previously. These new access roads would be designed to be 18-feet-wide, and existing access roads would be widened as needed. Section 2.3.10.1, "Siting for Final Engineering," states that "determinations of road location curvature, cuts and fills, grades and drainage, and necessary erosion controls would be made in accordance with design standards and best management practices and/or landowner requirements." In addition, Section 2.3.2.1, "Additional Environmental Analysis," notes: "During final engineering for the proposed project, areas in addition to the identified project areas may be determined to be required, especially for the 66-kV subtransmission line reconductoring and fiber optic telecommunications cable installation project components. If additional areas are required for the proposed project that may result in land disturbance other than that identified in FEIR Appendix A Table 2-6, "Land Disturbance," and other than that which would occur in the locations identified by text and on the figures documented by this EIR, additional environmental analysis may be required."

Because design modifications were determined to be required, primarily based on new Los Angeles County Low Impact Development requirements that became effective after publication of the FEIR, Los Angeles County Fire Department requirements for the grade of these access roads, and geotechnical investigations completed to date, this Addendum constitutes the additional environmental analysis required to assess these design modifications, as allowed in the EIR.

Additionally, SCE's proposed scope changes include proposed crane pad locations for TSP and access road and associated infrastructure construction for the 66-kV subtransmission line. FEIR Appendix A Section 2.3.10.3, "Tubular Steel Pole Installation," states that cranes would be used for installation of TSPs, and that if the terrain is not suitable to support crane activities, a temporary 50- by 50-foot (0.06-acre) crane pad would be constructed, but no specific locations were included. Appendix A Table 2-6 of the FEIR estimated that seven temporary 500- by -100-foot (8.4 acre) wire-pulling, tensioning, and

splicing sites would be necessary for the 66-kV subtransmission line reconductoring. Specific locations for the proposed crane pads and wire-pulling, tensioning, and splicing sites are presented in Attachment 1 to this Addendum.

Additional Road Features

The following modifications are proposed to features associated with access roads for the 66-kV subtransmission line:

- Installation of devices to manage stormwater and prevent erosion, including approximately 50 water bars, up to 40 McCarthy (or "Mac") drains, up to 60 soil cement berms, up to 20 overside drains, up to 10 downdrains, up to 15 drainage crossings, up to five catch basins, and up to 10 energy dissipaters (not including the energy dissipaters that are a component of the other drainage devices) or equivalent drainage control devices as determined after completion of final engineering. The number, type, and location of drainage devices were not specified, most locations were not surveyed, and thus impacts on specific locations due to drainage devices were not analyzed in the FEIR; and
- Repair or stabilization of existing access roads by installing up to 40 retaining walls at up to 20 locations. The retaining walls would range in size from 4 to 16 feet tall and 40 to 180 feet long. The types of retaining walls to be installed would include gabion, Hilfiker, and soldier pile. Gabion retaining walls are constructed of boulders and cobbles contained in wire mesh cubes, and Hilfiker-type walls use wire mesh to stabilize native soils. The soldier pile walls would be constructed of steel sheeting placed between steel beams.

The FEIR assessed the construction of features associated with access roads, including drainage structures, and retaining walls. Specifically, FEIR Appendix A Section 2.3.12, "Access Road Construction," states that "drainage structures such as wet crossings, water bars, over-side drains, and pipe culverts would be installed to allow for construction traffic usage as well as prevent road damage due to uncontrolled water flow." The FEIR estimated that one crossing and/or culvert would be installed at one location which would impact one potentially jurisdictional drainage, although a formal wetland delineation had not yet been conducted at the time the FEIR was written (see FEIR Appendix A Section 2.2.10, "Access Roads," Figure 2-12, *Access Road Modification and Drainage Near Structures 27 and 28* [Note: these TSPs have been renumbered and are TSPs 24 and 25 in this Addendum and the PFM]),. The FEIR also stated that up to four other potentially federally protected waters could be impacted by project construction, two of which were associated with the 66-kV subtransmission line component. However, impacts on these four waters were limited to the riparian area and did not include impacts such as direct removal, fill, and other work in waters. FEIR Appendix A Section 2.3.12 also states that slides, washouts, and slope failures would be repaired and stabilized by installing retaining walls or other means necessary to prevent future failures. Based on final engineering, SCE has provided additional information about the number and location of drainage devices and retaining walls (additional details provided in the PFM, Attachment B, Appendix B, "Stormwater/Erosion Control Devices and Retaining Walls"), and they are analyzed in this Addendum.

Land Disturbance

The updated civil engineering scope represents a reduction in the temporary habitat disturbance area. The FEIR assessed temporary impacts of 68.8 acres (for TSP installations and structure removal sites). The proposed civil engineering scope revisions reduce the temporary impacts estimate to 24.7 acres. The

permanent habitat disturbance estimate, however, has increased from 6.9 acres to 11.9 acres because of the proposed access roads.[4]

Construction Equipment and Workforce

Additional equipment and 12additional workers are proposed for retaining wall construction. The FEIR did not estimate any equipment or workforce for retaining wall construction.

4.0 Evaluation of Proposed Changes to the Aliso Canyon Turbine Replacement Project

Analysis of potential environmental impacts resulting from the proposed modifications focuses on the following environmental resources:

- Aesthetics
- Air Quality
- Biology
- Cultural and Paleontological Resources
- Geology and Soils
- Greenhouse Gases
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use
- Noise
- Population and Housing
- Traffic and Circulation

The proposed modifications would have no effect on the remaining environmental resources assessed in the certified EIR and are not discussed further in this Addendum.

4.1 Aesthetics

The proposed modifications would not present a change with the potential to create a new source of substantial light or glare beyond what was analyzed in the FEIR; therefore, impacts under this criterion are not discussed further in this Addendum. In addition, it should be noted that with the proposed modifications, 26 fewer TSPs would be installed along the 66-kV route and seven fewer TSPs would be removed in comparison to what was analyzed in the FEIR.

Structure Heights

The FEIR indicated that the TPSs would be between 55 and 150 feet high depending on site survey information and final engineering. Therefore, the FEIR provided a conservative analysis and assumed that the height of all proposed TSPs, other than those on Wiley Canyon Road, would be 150 feet tall. The FEIR included visual simulations for TSPs, 150 feet in height, to show potential changes to the area's visual character from six selected viewpoint locations that best represent typical and sensitive views of project components. For all six viewpoint locations, the FEIR found that while the TSPs would be incrementally taller than existing electrical infrastructure, the change in visual character and quality resulting from implementation of the project would be less than significant.

[4] These disturbance estimates are for all work associated with SCE's proposed 66-kV subtransmission lines, including the eight structures not evaluated in this Addendum (TSPs SF-1 to SF-3 and TSPs 45–49) at San Fernando and Natural Substations.

The proposed modifications would result in an overall reduction in the number of TSPs to be installed and the height of the TSPs would be within the range assessed in the FEIR. Therefore, the proposed modifications would not result in a new significant effect on aesthetic resources or in substantially more severe effects than those addressed in the FEIR.

Modified TSP Installation Locations

The installation locations for proposed TSPs 38, 39, 40, 41, and 43 would be adjusted by approximately 150 feet or less to sites that are closer to existing access roads (see Attachment 1 to this Addendum). Although new ROW adjacent to the existing ROW would be required, the proposed modification would not alter the FEIR's determinations regarding impacts on aesthetic resources. TSP 34 would be installed across the street from the site identified in the FEIR. It would still be installed within existing ROW and would not alter the FEIR's determinations.

TSP 32 would be installed in new ROW located higher on the hillside than originally analyzed and would still be visible to motorists along I-5 and to Michael D. Antonovich (MDA) Open Space trail users. However, the FEIR indicated that this TSP would be visible along I-5 and that the installation of TSPs in the area would not substantially degrade the existing character or quality of views due to the presence of similar subtransmission line and utility pole infrastructure in the area. The proposed location for TSP 32 would not result in a new significant effect on aesthetic resources or in substantially more severe effects than those addressed in the FEIR.

Access Road Modifications and Retaining Walls

Proposed modifications to the access and spur roads along the 66-kV subtransmission line route and the proposed installation of retaining walls and additional drainage features in select locations may result in an increase in the duration of construction activities at each location, which would be visible to local residents, motorists, and recreational users. However, the duration of construction activities in each location would still be approximately two weeks or less, and therefore, the incremental change in construction duration at each location would be negligible, and the potential impacts from construction activities on aesthetic resources would remain less than significant.

On a long-term basis, the proposed retaining walls (see Section 3.3, "Proposed Modifications to SCE Subtransmission Line Access Roads and Work Sites") required for access road construction may be visible from open space areas, residences, or local roadways as follows:

- Retaining walls proposed at TSP sites 14, 24, 25, 26, 28, 29, and 30 and between TSP sites 19 and 21 may be visible from a section of I-5 designated as an Eligible State Scenic Highway between Pico Canyon Road in the north and the I-5/State Route 14 interchange in the south. These walls may also be visible from Santa Clarita Woodlands Park and/or the MDA Open Space Preserve; and
- Retaining walls proposed at TSP sites 39, 40, and 43 would be visible from locations within the MDA Open Space Preserve (see Attachment 1 to this Addendum).

The FEIR states that the usage volume, duration of view, and frequency of views from both Santa Clarita Woodland Park and the MDA Open Space Preserve would be low but that viewer sensitivity would be high. However, the retaining walls and graded roads would still be located more than one-half mile from the existing trails in open spaces areas, and the existing viewshed from these open space trails include views of I-5 and electrical infrastructure along the I-5 corridor. Temporarily impacted areas would be revegetated, as required by APM BR-3 and MM BR-3. The regrowth of vegetation along the edges of access roads and temporary work sites and weathering of the road surfaces would serve to break up the outline of the access roads and related features and partially screen them on a long-term basis.

According to the FEIR, the number of viewers, duration of views, and frequency of views from segments of I-5 designated as an Eligible State Scenic Highway would be high, medium-high, and medium, respectively, but viewer sensitivity would be low. Impacts associated with the installation of TSPs and access roads that may be visible from the designated Eligible State Scenic Highway were assessed in the FEIR. The proposed modifications include the installation of retaining walls that would be required for access road construction. The retaining walls, however, would be designed to reduce contrast with their surroundings and would be similar to existing infrastructure located along the I-5 corridor. They would be constructed from stone and local soils. Steel and wood retaining-wall materials would painted or stained to approximate the soil color in proximity to the walls. The colonization of vegetation along retaining walls over time would further reduce visibility of the walls. Therefore, the proposed access road modifications and retaining walls would not result in a new significant effect on aesthetic resources or in substantially more severe effects than those addressed in the FEIR.

In conclusion, construction and operation of the project with the proposed modifications would not result in one or more new significant impacts on aesthetic resources beyond those analyzed in the FEIR.

4.2 Air Quality

The FEIR found that impacts on air quality would be less than significant without mitigation for each of the significance criteria identified except a cumulatively considerable net increase of ozone precursors, including oxides of nitrogen (NOx) and reactive organic gas (ROG). The National Ambient Air Quality Standards define ozone as one of seven criteria pollutants.

For the proposed modifications, SCE provided revised construction emission estimates in PFM Attachment B, Appendix A, "Air Quality and Greenhouse Gas Calculation Sheets." The revised emission estimates demonstrate that although the proposed modifications would increase emissions, the increases would be minor and still represent a small fraction of the regional emission inventory included in the South Coast Air Quality Management District (SCAQMD) 2007 Air Quality Management Plan (AQMP) and would not substantially contribute to the region's emissions budget. In addition, construction equipment for the project would be operated in compliance with applicable federal, state, and local regulations that mandate reductions in emissions as outlined in the plan and related State Implementation Plan. Therefore, project emissions, as modified, would still be consistent with the SCAQMD 2007 AQMP. In addition, no new objectionable odors would be generated as a result of the proposed modifications.

The proposed modifications, however, would increase NOx and ROG emissions and would increase emissions to sensitive receptors in proximity to the proposed construction activities. This section addresses changes in construction-related emissions associated with the proposed project modifications. The proposed modifications would not alter operations-related emissions, and therefore, operation of the project is not discussed further in this section.

4.2.1 Ozone Precursors

The ACTR Project components are located in a region designated "nonattainment" for NOx and ROG. The FEIR found that the ACTR Project would result in NOx and ROG emissions that would be significant without mitigation but that with MM AQ-1, MM AQ-2, and MM AQ-3 implementation, emissions would be less than significant. The proposed modifications would increase both NOx and ROG emissions during construction.

The FEIR evaluated emissions from seven potential scenarios that represent worst-case concurrent construction activities. SCE's proposed modifications would apply to the following three scenarios defined in the FEIR:

- **Scenario 3:** Proposed Central Compressor Station site clearing and preparation; proposed Natural Substation civil and fencing; and subtransmission guard structure installation, survey, access roads, structure framing and setting, TSP footing installation, and line assembly.
- **Scenario 4:** Proposed Central Compressor Station civil; proposed Natural Substation mechanical and electrical equipment room, electrical, wiring, transformer installation, testing, maintenance, paving and landscaping; and all subtransmission line construction activities.
- **Scenario 5:** Proposed Central Compressor Station mechanical and electrical; proposed Natural Substation mechanical and electrical equipment room, electrical, wiring, transformer installation, testing, maintenance, paving and landscaping; and all subtransmission line construction and structure removal activities.

The FEIR identified mitigation to reduce NOx and ROG emissions to below SCAQMD daily thresholds, and thus, to less than significant levels. PFM Attachment B, Appendix A, "Air Quality and Greenhouse Gas Calculation Sheets," demonstrates that with the proposed modifications, NOx emissions would increase for each scenario but that MM AQ-1 and MM AQ-2 would reduce the emissions to below SCAQMD daily thresholds, and implementation of MM AQ-3 would ensure that credits are purchased to offset emissions that cannot be reduced to below the SCAQMD threshold. This would ensure that NOx emissions remain less than significant.

ACTR Project emissions after the incorporation of MM AQ-1 and MM AQ-2 are shown in Table 4-1. The revisions shown in Table 4-1 identify the changes in emissions with incorporation of the proposed modifications. Note that no changes are proposed to project components in Ventura County; therefore, the proposed modifications are only assessed with respect to applicable SCAQMD significance thresholds.

Table 4-1 Mitigated Daily Construction Emissions (FEIR Appendix A Table 4.3-9) Updated with SCE's Proposed Modifications (Los Angeles County)

Scenario[1]	Peak Daily Construction Emissions (pounds/day)					
	CO	NO_x	ROG	PM_{10}	$PM_{2.5}$	SO_2
1	165	257	29	33	17	0.6
2	219	361	45	82	26	0.7
3	260	377	47	76	26	0.7
4	~~291~~359	~~377~~518	~~50~~65	~~81~~89	~~27~~30	~~0.7~~1.0
5	~~309~~422	~~371~~590	~~588~~4	~~76~~90	~~26~~35	~~0.7~~1.1
6	~~123~~198	~~204~~340	~~28~~45	~~19~~28	~~22~~30	~~0.4~~0.6
7	26	47	13	14	3	1.4
Peak Daily	**~~309~~422**	**~~377~~590**	**~~588~~4**	**~~82~~90**	**~~27~~35**	**1.4**
SCAQMD Significance Threshold	**550**	**100**	**75**	**150**	**55**	**150**
Exceeds Threshold?	**No**	**Yes**	**~~No~~Yes**	**No**	**No**	**No**

Sources: CPUC 2013, SCAQMD 2011, SoCalGas and SCE 2014

Key: CO = Carbon monoxide, FEIR = Final Environmental Impact Report, NO_x = Oxides of nitrogen, PM_{10} = Particulate matter less than or equal to 10 microns in diameter, $PM_{2.5}$ = Particulate matter less than or equal to 2.5 microns in diameter, ROG = Reactive organic gas, SCAQMD = South Coast Air Quality Management District, SO_2 = Sulfur dioxide

Note: [1] Emissions were calculated for seven scenarios in the FEIR. Each scenario includes a combination of construction activities that could occur simultaneously. Scenarios 1 through 3 and Scenario 7 would not change as a result of the proposed modifications.

As shown in Table 4-1, implementation of MM AQ-1 as identified in the FEIR would reduce daily ROG emissions to below the SCAQMD daily threshold for Scenarios 4 and 6, but emissions under Scenario 5 would exceed the ROG threshold. The following revisions to MM AQ-1 would ensure that daily ROG emissions under Scenario 5 remain less that significant with the proposed modifications:

MM AQ-1: Construction Emission Reduction Measures. *The applicant and SCE will implement the following emission reduction measures for all construction activities:*

1. *Ensure that all off-road diesel-powered construction equipment with engines greater than 50 horsepower (hp) are compliant with Tier 3 off-road emissions standards where available. In the event equipment with a Tier 3 engine is not available for any off-road engine larger than 50 hp, that engine shall be operated with tailpipe retrofit controls that reduce exhaust emissions of NO_x and PM to no more than Tier 3 emission levels.*
2. *Equipment with an engine not compliant with the Tier 3 standard will be allowed on a case-by-case basis only when the applicant or SCE has documented that no Tier 3 equipment (or emissions equivalent retrofit equipment) is available for a particular equipment type. Each case shall be documented with signed written correspondence by the appropriate construction contractor, along with documented correspondence from at least two construction equipment rental firms representing a good faith effort to locate engines that meet Tier 3 requirements. Documentation will be submitted to CPUC staff for review before equipment is used on the project.*
3. *Make available to CPUC staff and/or construction monitors a copy of each piece of construction equipment's certified tier specification, BACT documentation, and/or CARB or SCAQMD operating permit, as applicable, at the time of mobilization of each applicable unit of equipment.*
4. *Prior to start of Central Compressor Station mechanical and electrical construction activities, provide to the CPUC a weekly construction schedule that indicates whether Scenario 5 would occur. If Scenario 5 occurs on any given day, provide an equipment usage and emissions log that demonstrates the SCAQMD daily threshold for ROG was not exceeded.*

Implementation of MM AQ-1 as revised would reduce ROG emissions to below the SCAQMD daily threshold as shown in Table 4-2, row 4, "With Proposed Modifications, MM AQ-1 (as revised), and MM AQ-2".

Table 4-2 Scenario 5 Daily Construction Emissions Updated with SCE's Proposed Modifications and Revised MM AQ-1 (Los Angeles County)

Scenario 5 Version	Peak Daily Construction Emissions (pounds/day)					
	CO	NO_x	ROG	PM_{10}	$PM_{2.5}$	SO_2
FEIR Table 4.3-5	291	377	50	81	27	0.7
With Proposed Modifications	309	569	81	78	33	0.7
With Proposed Modifications, MM AQ-1 and MM AQ-2	422	590	84	90	35	1.1
With Proposed Modifications, MM AQ-1 (as revised), and MM AQ-2	**387**	**526**	**73**	**85**	**32**	**1.0**
SCAQMD Significance Threshold	**550**	**100**	**75**	**150**	**55**	**150**
Exceeds Threshold?	**No**	**Yes**	**No**	**No**	**No**	**No**

Sources: CPUC 2013, SCAQMD 2011, SoCalGas and SCE 2014

Key: CO = Carbon monoxide, FEIR = Final Environmental Impact Report, MM = mitigation measure, NO_x = Oxides of nitrogen, PM_{10} = Particulate matter less than or equal to 10 microns in diameter, $PM_{2.5}$ = Particulate matter less than or equal to 2.5 microns in diameter, ROG = Reactive organic gas, SCAQMD = South Coast Air Quality Management District, SO_2 = Sulfur dioxide

The FEIR's emissions methodology and calculations conservatively assumed that separate equipment lists would apply to all of the activities identified in Scenario 5 and that all the equipment could be operated concurrently on a single day. Although activities under Scenario 5 could occur on a single day, the equipment used for some Scenario 5 activities would be the same equipment used for other Scenario 5 activities. For example, installation of the duct banks, vaults, and conduit would use many of the same units of equipment. The original PFM Attachment B, Appendix A, "Air Quality and Greenhouse Gas Calculation Sheets," double-counted the equipment instead of assuming there would be an overlap. SCE updated the air quality and greenhouse gas calculation sheets (Attachment 2, "Updated Petition for Modification Attachment B, Appendix A, "Air Quality and Greenhouse Gas Calculation Sheets" (10/30/14)") to correct the double-counted equipment. Table 4-3 identifies the Scenario 5 equipment list as modified by SCE to update the air quality and greenhouse gas calculation sheets in Attachment 2 for subtransmission line vault, duct bank, and conduit installation activities.

Table 4-3 Scenario 5 Subtransmission Line Vault, Duct Bank, and Conduit Installation Equipment List as Updated to Account for Double-Counted Equipment in the Original Air Quality Calculations for the Petition for Modification

Equipment	Horsepower	Hours/Day used	Units	ROG (lbs/day)
Excavator	250	6	2	~~8.63~~1.74
Dump Truck	350	~~14~~8	~~four~~2	~~4.59~~2.62
Backhoe/front loader	125	~~8~~4	~~2~~1	~~0.72~~0.36
Water Truck	350	~~12~~8	~~3~~1	~~1.86~~0.93
30-Ton crane truck	500	6	1	1.5
Concrete Mixer Truck	350	~~four~~2	~~6~~3	~~1.96~~0.98
Lowboy Truck/Trailer	450	~~8~~4	~~2~~1	~~1.15~~0.47
Flat Bed Truck/Trailer	400	4	3	1.97
1-Ton Crew Cab Flat Bed, 4x4	300	~~17~~4	~~8~~2	~~8.2~~1.31
~~¾-Ton Crew Cab Flat Bed, 4X4~~	~~300~~	~~5~~	~~2~~	~~1.64~~
Pipe Truck/Trailer	275	6	1	0.98
Compressor Trailer	60	~~9~~4	~~2~~1	~~1.07~~0.41
80-Ton Rough Terrain Crane	350	6	1	0.75

Sources: SCE 2014c
Key: ROG = Reactive organic gas

Because a worst-case approach was taken for the original air quality calculations and double-counted equipment was included in the calculations, it is reasonable to assume that MM AQ-1, as revised, would be feasible to implement. Implementation of MM AQ-1, as revised, would ensure that the SCAQMD's daily ROG threshold would not be exceeded.

4.2.2 Localized Significance Threshold

As assessed in the FEIR, a number of sensitive receptors would be located within 100 feet of the project. Although the distance between proposed construction activities and each of these sensitive receptors has changed in some cases, based on the proposed modifications, these changes would not differ substantially from the distances described in the FEIR and would not result in any new sensitive receptors within 100 feet of construction activities. However, as a result of additional construction activities in each of these locations, the proposed modifications would increase NO_x, CO, PM_{10}, and

$PM_{2.5}$ emissions in the vicinity of sensitive receptors. As summarized in Table 4-4, however, the revised emissions estimates would still not exceed the localized significance thresholds.

Table 4-4 Comparison of 66-kV Subtransmission Emissions (FEIR Appendix A Table 4.3-8) Updated with SCE's Proposed Modifications to Localized Significance Threshold Levels (Los Angeles County)

Construction Activity	Maximum Daily Onsite Emissions (pounds/day)				LST Level for Construction[1] (pounds/day)			
	CO	NO_X	PM_{10}	$PM_{2.5}$	CO	NO_X	PM_{10}	$PM_{2.5}$
66-kV Subtransmission Line Segments A, B, and C[2]	~~29~~30	~~69~~87	~~3.5~~3.5	~~2.6~~2.7	590[3]	114	4	3

Source: SoCalGas and SCE 2014
Key: CO = Carbon monoxide; kV = Kilovolt; LST = Localized Significance Threshold; NO_x = Oxides of nitrogen; PM_{10} = Particulate matter less than or equal to 10 microns in diameter; $PM_{2.5}$ = Particulate matter less than or equal to 2.5 microns in diameter; ROG = Reactive organic gas; SO_2 = Sulfur dioxide
Notes:
1. Thresholds for Santa Clarita Valley receptor areas.
2. Telecommunications lines would also be installed along these 66-kV segments, but the telecommunications lines would not be installed concurrent with the 66-kV conductor and would result in lower onsite emissions.
3. LST Thresholds based on 1-acre site and distance of 25 meters to receptor.

In conclusion, construction and operation of the project with the proposed modifications would not result in one or more new significant impacts with regard to air quality beyond what was analyzed in the EIR.

4.3 Biological Resources

While the project area as defined in this Addendum includes both SoCalGas and SCE project elements, the construction scope changes proposed and analyzed in this document are for SCE components only. Therefore, the additional biological information provided by SCE's Habitat Assessment (see PFM Attachment C) is a necessary supplement to the existing biological knowledge used for the FEIR. However, this section provides a detailed analysis of the potential impact on biological resources that takes into account all proposed SoCalGas and SCE modifications, as defined in Section 3.0, "Description of the Proposed Modifications."

The proposed modifications do not conflict or potentially conflict with provisions of any adopted local, regional, or state habitat conservation plans. Therefore, this topic is not discussed further in this Addendum.

Potential impacts of the proposed modifications could include adverse effects on special status species and their habitat, riparian habitat and sensitive natural communities, federally protected wetlands, the movement of fish or wildlife species and migratory corridors, or conflict with local policies or ordinances protecting biological resources.

MMCRP Modifications

As described in Section 3.1, "Proposed MMCRP Modifications," the applicant and SCE proposed refinements to APM BR-4, MM BR-5, and BR-15 that address biological resources. Modifications of these measures are proposed to allow the feasibility of construction while also maintaining protection of

biological resources within the project area. Proposed changes to two additional measures, HZ-2 and NS-3, would not impact biological resources at all. As described and analyzed in Section 3.1, " Proposed MMCRP Modifications" none of the proposed measure modifications would result in adverse effects on biological resources beyond those analyzed in the FEIR.

66-kV Subtransmission Line Modifications

Proposed SCE scope changes for the subtransmission line reduce the overall total disturbance from approximately 76 acres to approximately 37 acres. This includes a decrease in temporary impacts by approximately 44 acres, and an increase in permanent impacts by approximately 5 acres. The overall disturbance decrease would result primarily from a reduction in the total number of needed TSPs. Several TSPs are proposed to be relocated due to final engineering as described in Section 3.2, "Proposed Modifications to SCE's 66-kV Subtransmission Line Structures." Most of the relocations are within 5 to15 feet of the original FEIR locations, with the exception of approximately five TSPs that would be relocated approximately up to 300 feet outside the original ROW. All of these new relocations were surveyed in 2014 by SCE (PFM Attachment C), and none of them encroach upon sensitive habitat that has not already been analyzed and accounted for in the FEIR.

Access Road Modifications

At the time the FEIR was completed, final engineering design of the access roads for the subtransmission line had not been conducted. As described in Section 3.3, "Proposed Modifications to SCE Subtransmission Line Access Roads and Work Sites," SCE currently proposes to improve access roads along the route that would result in increased impacts on drainages and terrestrial landforms, but reduce the overall temporary impacts of the project. Permanent impacts would be increased due to retaining wall installations and road improvements, some of which are in or near drainages.

Special Status Species Impacts

Special status wildlife species were observed during the 2014 SCE Habitat Assessment, including several birds, Swainson's hawk, golden eagle, olive-sided flycatcher, and nesting oak titmouse, and one reptile, the coastal whiptail. Six sensitive plant species were observed as well, including slender mariposa lily, club-haired mariposa lily, Santa Susanna tarplant, Plummer's mariposa lily, Palmer's grappling hook, and Southern California black walnut. With the exception of the oak titmouse and club-haired mariposa lily, all of the above observed species were included for impact analysis in the FEIR. Nesting occurrences of oak titmouse are considered special status by the California Department of Fish and Wildlife (CDFW), and while club-haired mariposa lily has a lower California Native Plant Society rank (4.3) than either slender mariposa lily or Plummer's mariposa lily, it is included here as sensitive as this species is often mistaken in the field for the slender mariposa lily.

Impacts to special status species and their habitat resulting from the proposed scope changes are generally similar to or less than those analyzed in the FEIR. No direct impacts on species listed under the state or federal Endangered Species Act (ESA) are expected to occur as a result of the proposed modifications. However, the proposed scope changes would directly impact special status plants, including slender mariposa lily, club-haired mariposa lily, and Southern California black walnut due to plant removal, crushing, extensive tree trimming, or being blanketed by dust during project construction. Indirect impacts for special status and common wildlife from proposed modifications could include loss of foraging habitat, interference with avian nesting behavior, crushing of fossorial wildlife, increased vehicle traffic, increased noise and human presence, and habitat degradation by increased weed species. Most of the indirect impacts would be short-term in nature. With the implementation of mitigation measures and APMs in the FEIR, particularly the generation of the Mariposa Lily Mitigation Plan, the Nesting Bird Management Plan, preconstruction surveys, biological monitoring and wildlife relocation, exclusionary fencing, and nesting bird surveys, impacts on special status species resulting from the proposed scope changes are considered to be less than significant.

Sensitive Natural Communities/Riparian Habitat, and Critical Habitat

The FEIR stated that impacts on special status natural communities could result from construction of the project, but these were not fully quantified due to the lack of complete data on the 66-kV subtransmission line. Table 5 of the Habitat Assessment (PFM Attachment C) outlines the total acreage of temporary and permanent disturbance from all SCE project work to coastal sage scrub (8.06), coast live oak woodlands (3.3), southern California walnut woodland (0.3), and southern mixed evergreen forest (0.1). While no riparian woodland occurs within project disturbance areas, riparian habitat is present immediately adjacent to some work areas. No southern mixed riparian forest or coast live oak riparian forest occur within project disturbance areas; thus, there would be no direct impacts on these communities as a result of the Project, in contrast to the 1.8 acres of impact originally estimated in the FEIR. Scattered riparian trees could be directly impacted (i.e. removed or substantially trimmed) along the subtransmission line near access road and drainage improvements, and near the Tap realignment.

Impacts on sensitive natural communities would be the same as those analyzed in the FEIR and include tree removal, tree trimming, root crushing, increased soil erosion, dust accumulation on leaves, and indirect impacts from the proliferation of invasive weed species and increased noise and lighting. Even with proposed scope changes, impacts would be temporary, minimal compared to the total acreage of each type within the project area, and negligible compared to the acreage of these vegetation types in the region. Impact on coastal sage scrub, oak woodlands, walnut woodland, and mixed evergreen forest would represent approximately 0.04 percent, 0.04 percent, 2.9 percent, and 0.5 percent, respectively, of these communities presence within the project area. Additionally, mitigation measures outlined in the FEIR would reduce impacts on sensitive natural communities resulting from the proposed scope changes to less than significant.

Sections of the project area are within USFWS designated critical habitat for the coastal California gnatcatcher, listed as threatened under the federal ESA. In most cases, the proposed work activities occur just inside the designated critical habitat. The FEIR states that the 66-kV line construction would temporarily impact a maximum of 36.7 acres of critical habitat and permanently impact a maximum of 3.2 acres. This impact estimate would decrease due to the modifications presented in this Addendum, as well as the refinement of disturbance areas due to final engineering to 4.07 acres of critical habitat temporarily impacted and 1.05 acres permanently impacted. Results from protocol-level surveys conducted in spring and summer of 2014 have confirmed the absence of coastal California gnatcatchers within potential impact areas (Karpman and Patterson 2014.). Modifications to APM BR-4 (Section 3.1.1, "Applicant Proposed Measure BR-4") enhance protection of coastal California gnatcatcher during construction. In combination with other mitigation measures and APMs in the FEIR, as well as ongoing federal permitting consultation under Section 7 of the ESA, impacts on this species and its critical habitat resulting from the proposed scope changes are considered to be less than significant.

Wetlands and Jurisdictional Waterways

The FEIR stated that construction of the project could result in 0.06 acres of temporary impacts and 0.008 acres of permanent impacts on wetlands and jurisdictional waterways, concentrated at a single seasonal drainage between TSP structures 27 and 28 (FEIR Appendix A, Section 2.2.10, "Access Roads," Figure 2-12, "Access Road Modification and Drainage Near Structures 27 and 28*"* [Note: these TSPs have been renumbered as TSPs 24 and 25 in this Addendum and the PFM]). Due to a lack of data on access road locations and improvements, the FEIR underestimated impacts on jurisdictional waterways. With consideration of the proposed scope changes, the total direct impact on these features has increased to 0.9 acres for Waters of the State (CDFW) and 0.1 acres for Waters of the U.S. (United States Army Corps of Engineers [USACE]). Of those, 0.6 acres would be temporary and 0.4 acres would be permanent. Direct impacts would result from permanent infrastructure at several drainage crossings, and potentially increased sediment loading and hazardous construction chemicals into the drainages.

Indirect impacts on jurisdictional waterways would result from increased erosion, habitat disturbance, and flow alteration. However, many of the proposed changes would improve existing failing road culverts, thus potentially reducing long-term erosion and flow alteration dynamics from roads. Direct and indirect impacts resulting from the proposed scope changes do not substantially differ from the impacts analyzed in the FEIR. Implementation of MMs and APMs outlined in the FEIR such as MM BR-5, APM GE-2, and APM AQ-3, combined with compliance with the terms and conditions of state and/or federal permits/authorizations for work in riparian areas or wetlands would reduce impacts on jurisdictional features resulting from the proposed scope changes to less than significant.

Fish or Wildlife Movement/Migratory Corridors

The proposed scope changes involve more work within riparian corridors than originally analyzed in the FEIR, and this could have an impact on special status and common fish, amphibians, birds, and mammals in the area that utilize these drainages as potential movement or migratory corridors. The majority of the drainages within the project disturbance areas are naturally ephemeral and thus do not provide reliable movement corridors for fish. The vegetation communities along the 66-kV subtransmission line provide migratory corridors for wildlife, and the potential impact on these corridors has not changed from the original FEIR analysis. Mitigation measures and APMs outlined in the FEIR, such as exclusionary fencing, restoration efforts, construction monitoring, vehicle traffic restriction, and minimization of disturbed areas, would ensure the maintenance of continuous habitat corridors and reduce impacts resulting from the proposed scope changes to less than significant.

Local Policies or Ordinances

Since the certification of the FEIR, the number of oak trees that would sustain impacts beyond minor trimming (i.e., removal of 25 percent or more canopy trimming) by SCE project construction has increased from 29 to approximately 90 individuals, a conservative estimate. This increase is due to improved knowledge of construction methods and locations relative to existing oak trees as well as final engineering of the 66-kV line. MM BR-15 would reduce impacts on oak trees to less than significant. In its amended form (see Section 3.1.3, "Mitigation Measures BR-15"), this MM requires that certain construction activities near oaks be supervised by a qualified arborist, that oak trees removed or substantially damaged be replaced at a 4:1 ratio, that monitoring of replacement oaks be conducted for at least five years, and that replacement oaks maintain a 75 percent survivorship or greater. As required by the measure, SCE is preparing an Oak Tree Mitigation Plan for the SCE components. In its previous and amended form, MM BR-15 provides conformance with the local oak tree policies and ordinances governing the project. Project-related impacts on oak trees are less than significant with the implementation of MM BR-15 and do not conflict with local oak tree guidance.

4.4 Cultural and Paleontological Resources

Pursuant to APM CR-4 and MM CR-2, SCE prepared a Cultural Resources Assessment Report, which documents the findings of surveys conducted for the modified project area (Arcadis 2014a). No new sensitive archeological resources were identified within the limits of proposed disturbance during this site assessment.

However, to reduce the potential for impacts to both cultural and paleontological resources, SCE prepared an Archeological Monitoring and Treatment Plan and a Paleontological Monitoring and Treatment Plan in accordance with MM CR-1 and MM CR-6. These plans detail how SCE would comply with all construction related paleontological and cultural APMs and MMs (i.e., APM CR-2, APM CR-3, and MMs CR-3 through CR-5 and CR-7 through CR-10) including detailed plans for avoidance of and monitoring for cultural resources, the required qualifications for monitors, monitors' stop work authority as needed to assess or recover a discovery, and reporting and communication procedures (Arcadis 2014b, PaleoSolutions 2014). These measures would ensure that impacts on archeological and paleontological

resources, including human remains, are avoided or reduced to less than significant levels. Therefore, potential impacts to cultural or paleontological resources with the proposed modifications would remain less than significant.

4.5 Geology and Soils

FEIR Appendix A, Section 4.6.2.1, "Storage Field, 66-kilovolt subtransmission Line (Segments A, B, and C), and telecommunications route #1, describes existing conditions along the 66-kV subtransmission route and in the area of associated access roads. In accordance with APM GE-1, SCE is conducting ongoing geotechnical investigations for these project components. As a result of geotechnical investigations to date or the presence of underground utilities, four TSPs would need to be relocated (TSPs 18, 34[5], 42, and 43). Impacts associated with the relocation of these TSPs are discussed in each of the respective resource sections, as applicable.

The project modifications would result in a net increase in temporary and permanent surface disturbance and therefore increase the potential for soil erosion. However, SCE would implement APM GE-2, APM AQ-3, and revised MM BR-5, as well as all applicable best management practices for erosion control included in SCE's SWPPP. The ongoing geotechnical investigation will generate additional information on the potential for rupture of a known earthquake fault as well as identify potential threats due to seismic ground shaking, landslides, or liquefaction, as well as identify unstable geological or soil units. The geotechnical report will also recommend measures to reduce the potential impacts of these threats on construction and operation. With the implementation of these APMs and MMs, proposed modifications would have a less than significant impact on geology and soils during construction and operation.

4.6 Greenhouse Gases

The proposed modifications would result in an increase of greenhouse gas (GHG) emissions by approximately 1,523 metric tonnes carbon dioxide equivalent (MTCO2e) during construction. With the incorporation of this increase, GHG emissions during construction would total 6,578 MTCO2e, which would not exceed the SCAQMD interim GHG significance threshold of 10,000 MTCO2e. It should be noted that the project would result in a net reduction in GHG emissions as a result of replacing the existing gas turbine driven compressors with the new electric driven compressors. In addition, the proposed modifications would not cause the project to conflict with any applicable plan, policy or regulation. Therefore, impacts on GHG emissions would remain less than significant.

4.7 Hazards and Hazardous Materials

With the incorporation of the proposed modifications, the project would not be located within two miles of a public airport or public use airport and no emergency response or evacuation routes have been identified in the vicinity of the project. Therefore, impacts under these criteria are not discussed further in this Addendum.

As discussed in Section 3.7, "Hydrology and Water Quality," of this Addendum, the proposed modifications would result in an increase in vehicles and equipment use for construction of the access and spur roads. These vehicles and equipment would contain gas or diesel, which, if released, could present a hazard to the public or the environment depending on the location where the release occurred. However, vehicles and equipment were already assumed to be present during construction activities and

[5] TSP 34 would be relocated due to the Tap realignment, as well as for geotechnical reasons

the types and use of these vehicles and equipment would be similar to those described in the FEIR. In addition, the potential quantities of oil that could be released would be minimal and would not present a new or more significant hazard beyond that assessed in the FEIR. With the exception of additional vehicles containing minor quantities of oil, no new types or additional quantities of hazardous materials are anticipated as a result of the proposed modifications and no new areas of disturbance are proposed on hazardous materials sites compiled pursuant to Government Code Section 65962.5. In addition, the proposed modifications would not result in hazardous emissions or require handling of any hazardous materials, substances, or waste within one quarter mile of a school beyond what was analyzed in the FEIR.

The proposed modifications to project design would not result in any new significant risk to people or structures that could result in loss, injury or death involving wildland fires. As discussed in Section 3.1, "Proposed MMCRP Modifications," revisions to MM HZ-2 are proposed to provide clarification of the applicant and SCE's requirements for compliance, but would not result in a reduced level of protection to people or structures.

Therefore, the proposed modifications would not result in new or significant impacts associated with hazards and hazardous materials beyond those analyzed in the FEIR.

4.8 Hydrology and Water Quality

Proposed modifications would not present any change from the FEIR that has the potential to deplete groundwater supplies; create a new impact within a 100 year flood zone that has the potential to impede or redirect flood flows; or expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow. Therefore, impacts under these criteria are not discussed further.

Additional construction equipment and vehicles, as well as additional clearing and grading activities associated with the proposed modifications could create a new source of runoff that has the potential to impact water quality. However, the increase in construction equipment and vehicles would be minor, and the types of vehicles would be similar to what was described in the FEIR. Similarly, while additional clearing and grading activities would be required, these types of activities were assessed in the FEIR. In addition, as the overall permanent disturbance area would increase slightly, the temporary disturbance area would actually decrease. Therefore the proposed modifications would not present a substantial change.

As outlined in the FEIR, in accordance with APM BR-2, SCE would ensure that work zones are clearly staked and flagged prior to construction activities. In addition, SCE would prepare and implement a SWPPP to comply with National Pollution Discharge Elimination System Permit requirements. SCE's worker environmental awareness training, a requirement for all employees working on the project site, would include a summary of SWPPP requirements in accordance with APM HZ-6. The implementation of these APMs and the construction Spill Prevention Control and Countermeasures Plan would reduce the potential for runoff that may degrade water quality or otherwise violate any water quality standards or waste discharge requirements.

Proposed modifications also include the installation of stormwater and erosion control devices based on the results of the Hydrology and Hydraulics Study (see PFM Attachment D, "Hydrology and Hydraulics Study"). These modifications, which would include control devices such as cross culverts, water bars, Mac drains, gabion mattresses, and energy dissipaters, would convey and maintain flows and drainage patterns, protect existing and proposed access roads without creating diversions or impoundment, and reduce the potential for erosion that could impact water quality. They are designed to provide safe access

along access roads, including across existing jurisdictional drainage features (see Section 4.3, "Biological Resources," for additional information). These stormwater and erosions control devices would have a beneficial impact on hydrology and water quality and would not contribute to an alteration in the drainage pattern that would have the potential to result in substantial erosion, siltation, or flooding.

Therefore, impacts on hydrology and water quality resulting from the proposed modifications would remain less than significant.

4.9 Land Use

The proposed modifications would not cause the project to divide an established community and there is no habitat conservation plan or natural community conservation plan that covers the project area, including the areas of the proposed modifications. The overall permanent disturbance area would increase as a result of the proposed modifications. In addition, new ROW easements would be required as a result of modifications to the structure locations in the vicinity of the Tap, southwest of Sunshine Canyon Landfill, and adjacent to the eastern border of the storage field. However, the increase in the total area of permanent disturbance and the relocation of these structures would not conflict with any plans, policies, or regulations related to land use within the area where these modifications are proposed. Therefore, no new or more significant impacts on land use would occur as a result of the project modifications.

4.10 Noise

No changes to operations are proposed; therefore, the proposed modifications would not result in a permanent increase in ambient noise levels in the project vicinity. In addition, the project is not located within an area covered by an airport land use plan or within two miles of an airport or a private airstrip; therefore, impacts under these criteria are not discussed further in this Addendum.

As discussed in Section 4.2, "Air Quality," the FEIR assumed that a number of sensitive receptors would be located within 100 feet of the project. Although the proposed modification reduces the distance between proposed construction activities and the sensitive receptor in some cases, these changes would still be within the range of distances described in the FEIR and would not result in the addition of any new sensitive receptors within 100 feet of construction activities. Therefore, there would be no change to the potential exposure of persons to excess noise levels, groundborne vibrations, or groundborne noise levels beyond what was analyzed in the FEIR.

4.11 Population and Housing

As described in the environmental setting for the FEIR's Population and Housing section (FEIR Appendix A, Section 4.12.1), the existing 66-kV subtransmission line alignment south of Newhall Substation extends through residential areas and comes within 25 feet of residences in some places. One such residential area is Crescent Valley Mobile Home Estates, as referenced in the environmental setting of the FEIR's Land Use and Planning section (FEIR Appendix A, Section 4.10.1).

In response to a request for further information about the proposed modifications, SCE stated that a mobile home adjacent to the proposed site for TSP 23 along the existing 66-kV subtransmission line alignment had been abandoned and that Crescent Valley Mobile Home Estates removed the home from the property prior to FEIR certification in 2013 (SCE 2014b). The mobile home was at least partially located within SCE's existing ROW and would have limited SCE's ability to access the existing and proposed subtransmission structures at the site proposed for TSP 23. Crescent Valley Mobile Home

Estates agreed not replace the mobile home until the tower was replaced as part of the ACTR Project (SCE 2014b).

The FEIR determined that because the proposed project would not affect any residences, replacement housing would not be required and no one would be displaced, and that there would be no impact under the following two significance criteria: (1) displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or (2) displace substantial numbers of people, necessitating the construction of replacement housing elsewhere. The mobile home's abandonment and removal represents an update to the environmental setting evaluated in the FEIR but is not considered part of the ACTR Project because it was abandoned and already in the process of being removed by the property owner prior to inquiry by SCE and not due to actions taken by the applicant or SCE (SCE 2014b). Therefore, the no impact determination published in the FEIR remains valid, and this update to the environmental setting would not result in one or more new significant effects of the ACTR Project with respect to population and housing that were not discussed in the FEIR, result in substantially more severe effects, or allow for the implementation of mitigation previously found to be infeasible that would now be feasible.

4.12 Transportation and Traffic

As described in the Traffic Impact Study prepared for the EIR (Appendix J), the EIR found that implementation of the ACTR Project would generate 538 trips each day, with 100 trips occurring during the a.m. peak hour (71 in/29 out) and 225 trips occurring during the p.m. peak hours (29 in/196 out). These trips resulted from 232 construction workers, 19 shuttles, 12 dump trucks, and eight delivery trucks traveling to and from the study area daily. The EIR evaluated potential impacts on four intersections in the City of Santa Clarita and 10 intersections in the City of Los Angeles that provide local access to the project area. This assessment included project-related construction traffic, as well as estimated traffic generated by the completion and occupancy of approved or pending development projects (i.e., cumulative projects).

The proposed modifications that could affect traffic include the construction/modification of access and spur roads to install project-related infrastructure such as TSPs, retaining walls, and stormwater/erosion control features. As shown in PFM Appendix B Table 3.2-2, "Construction Equipment and Workforce, Updated Scope"(see also PFM Appendix B Table 3.2-1,"Construction Equipment and Workforce, Original Scope"), roadwork included in the proposed modifications would require five (5) additional construction workers and 9 pieces of construction equipment for up to 20 days. Installation of the retaining walls would require 12 additional construction workers and 26 pieces of construction equipment for up to 150 days. The proposed modifications would also require up to 40 dump trucks per day.

The proposed modifications would not result in additional vehicle traffic during the operations phase; therefore, impacts on transportation and traffic during operations would not be affected.

Consistency with Applicable Plans, Ordinances, or Policies for the Performance of the Circulation System

The FEIR found that with the addition of trips associated with project construction and trips from cumulative projects, the four study area intersections in the City of Santa Clarita would operate at Level of Service B, C, D and F during the a.m. and/or p.m. peak hour. However, the additional trips were not found to substantially increase vehicle delays nor decrease the level of service at these intersections. Therefore, no significant impacts on study area intersections in the City of Santa Clarita were identified and no mitigation was required. Similarly, the FEIR found that all 10 intersections in the City of Los Angeles would operate at acceptable levels of service (A, B, or C) with the addition of project

construction trips and trips from cumulative projects. No significant impacts on intersections in the City of Los Angeles were identified and no mitigation was required.

The addition of vehicle trips from the proposed modifications, from up to 12 additional construction workers and 40 dump trucks per day, would not substantially decrease the level of service at affected intersections during the a.m. or p.m. peak hours. Therefore, the proposed modification would not result in new significant impacts on intersection operations or a substantial increase in the severity of impacts previously identified.

The FEIR also found that while construction of certain project components would affect bicycle infrastructure and public transit, any impacts would be short term and temporary and would not conflict with any applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system. Additional trips required by the proposed modifications would similarly be short-term and temporary and would not conflict with applicable plans, ordinances or policies. Implementation of Traffic Control Plan (APM TT-1) and Commuter Plan (APM TT-3) would further ensure that conflicts with applicable plans, ordinances, or policies establishing measures of effectiveness for the performance of the circulation system are avoided.

Consistency with Applicable Congestion Management Program

The 2010 Congestion Management Plan (CMP) for Los Angeles County was implemented to address the impact of local growth on the regional transportation system. The FEIR found that the project would not add 50 or more trips during the a.m. or p.m. peak hours at any of the CMP monitoring intersections in the project study area, nor would it add 150 or more trips (in either direction) during either the a.m. or p.m. weekday peak hours to CMP freeway monitoring locations and therefore would not conflict with the 2010 CMP for Los Angeles County. The addition of project trips related to the proposed modifications would not cause the project to conflict with the 2010 CMP for Los Angeles County. Impacts under this criterion would be less than significant.

The proposed modifications include the expansion, repair, or construction of new access roads, which would be designed to avoid hazardous features for the safety of construction as well as operation and maintenance crews. None of these access roads would be accessible to the public or be a part of the public roadway system, and access would be restricted through installation of gates at fenced property lines to restrict public and recreational vehicular access to project roads. In addition, none of the access roads included in the proposed modification would result in changes to existing public roadway design, including intersections, alignment, lane configuration, or medians.

Hazards due to Design Features or Incompatible Uses

Construction of the project and project modifications would potentially require the use of oversize and/or overweight vehicles on area roadways. Installation of the replacement TSPs along the 66-kV subtransmission line reconductoring route would require the hauling and stacking of bundles of steel at tower locations, involving the use of several tractor-trailers for the delivery of construction materials. However, implementation of APM TT-1, Traffic Control Plan, during project construction would minimize short-term, construction-related impacts on local traffic and reduce potential traffic safety hazards through measures such as the installation of temporary warning signs at strategic locations near access points for the project components. Therefore, the proposed modifications would not substantially increase hazards due to a design feature or incompatible use and impacts would be less than significant.

Emergency Access

The FEIR found that the replacement of six lattice steel towers with new installation of TSPs along the Wiley Canyon Road corridor in the City of Santa Clarita would result in temporary travel lane reductions near four tower locations, and full road closures on Wiley Canyon Road near two tower locations where

the roadway is reduced to only two lanes of traffic. The FEIR also found that reconductoring of the 66-kV subtransmission line and installation of Telecommunications Route #1 would likely require the temporary closure of a section of I-5, between Calgrove Boulevard and State Route 14. Measures included under APM TT-1 and APM TT-3 would ensure that construction activities would not interfere with emergency response by ambulance, fire, paramedic, and police vehicles within the project area. Travel routes for emergency vehicles would remain unobstructed and adequate. Therefore, project construction activities would not result in inadequate emergency access and with the implementation MM TT-1, which requires City of Santa Clarita Traffic Engineer review, impacts were found to be less than significant.

Because no additional road closures would be required for the proposed modifications, no impacts beyond those addressed in the FEIR would result.

Consistency with Adopted Policies, Plans or Programs Regarding Public Transit, Bicycle, or Pedestrian Facilities

The FEIR found that several Metro bus and rail lines serve the project area, including the Antelope Valley and Ventura County Metrolink commuter rail lines and that public transit services and bicycle lanes are provided along Wiley Canyon Road. Implementation of the project would require temporary lane closures along Wiley Canyon Road, which would directly affect bicycle lanes and public transit services. In addition, a portion of Telecommunications Route #3 would cross the Metrolink Antelope Valley commuter rail line, potentially requiring a temporary closure of the rail line at this location until the fiber optic line has been strung and secured across the rail alignment.

Measures included under APM TT-1 (Traffic Control Plan) and APM TT-2 (Repair of Damaged Roads) would ensure that all construction work would be coordinated with affected local agencies to prevent negative effects to public transit services, bicycle facilities, and the Metrolink. No significant impacts on public transit, bicycle, or pedestrian facilities were identified, and no mitigation was required. Because no additional road closures would be required for the proposed modifications, no impacts, beyond those addressed in the FEIR would result.

In summary, construction of the proposed modifications would not result in one or more new significant effects with regard to transportation and traffic that were not discussed in the FEIR, result in substantially more severe effects, or allow for the implementation of mitigation previously found to be infeasible that would now be feasible.

5.0 Conclusion

This Addendum discusses prior environmental review conducted pursuant to CEQA for the ACTR Project and describes and evaluates the proposed modifications based on updates to the civil engineering scope and geotechnical studies. As discussed in this Addendum, the modifications to the FEIR for the ACTR Project would not result in a substantial increase in the severity of a previously identified significant effect, new significant effects, or findings that new or substantially modified mitigation measures or alternatives would reduce one or more significant effects.

Therefore, the CPUC has determined that an addendum as defined by CEQA Guidelines Section 15164 is the appropriate type of document to evaluate the proposed changes to the ACTR Project because none of the conditions calling for the preparation of a subsequent EIR, supplemental EIR, or subsequent negative declaration as specified by Public Resources Code Section 21166 or CEQA Guidelines Sections 15162 and 15163 would occur. The contents of this Addendum constitute the additions to the FEIR required to make it adequate for the proposed modifications.

6.0 References

Arcadis. 2014a. Cultural Resources Assessment Report. September 5, 2014. Approved October 2, 2014.

_____. 2014b. Addendum to the Southern California Gas Company Archeological Monitoring and Treatment Plan.

Bernhardt, E., and T. Swiecki. 2001. Restoring Oak Woodlands in California: Theory and Practice. Phytoshere Research. Vacaville, CA.

CPUC (California Public Utilities Commission). 2013. Aliso Canyon Turbine Replacement Project Final Environmental Impact Report. Prepared by Ecology and Environment, Inc. June.

Karpman, B., and L. Patterson. 2014. Coastal California Gnatcatcher Presence/Absence Survey Letter to Stacy Love, Recovery Permit Coordinator, Carlsbad Fish and Wildlife Office, and Chris Kofron, Senior Biologist and Recovery Permit Coordinator, USFWS. July 21, 2014.

PaleoSolutions. 2014. Addendum to the Southern California Gas Company Paleontological Monitoring and Treatment Plan. July 2014.

SCE (Southern California Edison). 2014a. Advice Letter 3067-E. Subject: Notice of Proposed Construction Project Pursuant to General Order 131-D. Southern California Edison's Natural Substation Project. Filed June 30, 2014. Effective August 1, 2014.

_____. 2014b. Christine McLeod, Southern California Edison. Email communication with Lara Rachowicz, Ecology and Environment, Inc. October 30.

_____. 2014c. Updated Petition for Modification Attachment B, Appendix A, "Air Quality and Greenhouse Gas Calculation Sheets" (10/30/14). Provided as Attachment 2 to this Addendum.

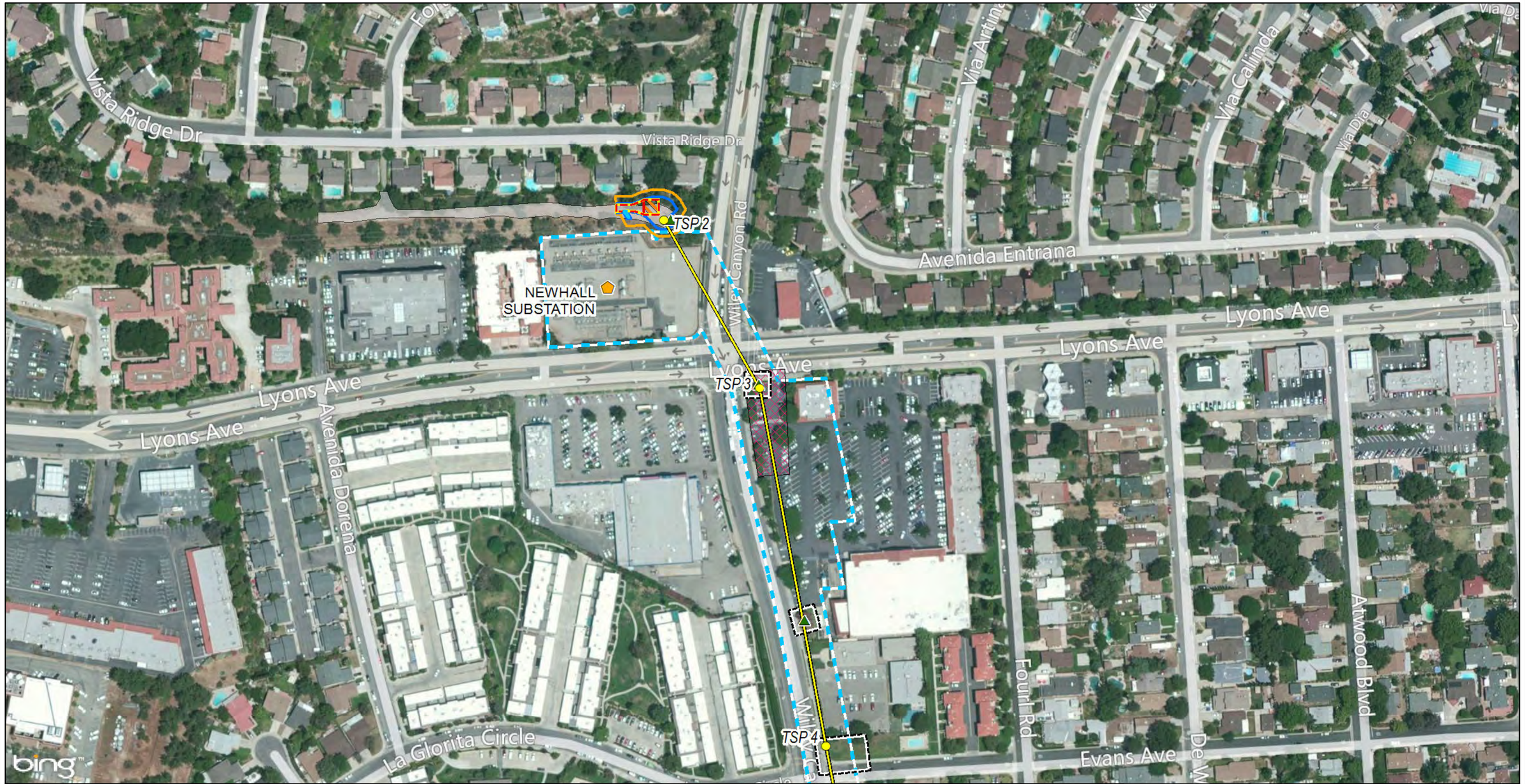
SCAQMD (South Coast Air Quality Management District). 2007. Final Air Quality Management Plan. June.

_____. 2011. SCAQMD Air Quality Significance Thresholds. March.

SoCalGas and SCE (Southern California Gas Company and Southern California Edison). 2014. Petition for Modification of Decision 13-11-023. September 11.

Attachment 1

Southern California Edison 66-kV Subtransmission Line and Natural Substation Map Sheets



SCE 66-kV Subtransmission Line and Natural Substation Map Sheets

Aliso Canyon Turbine Replacement Project

- Proposed Structures
- Remove Structures
- Existing Structure
- Proposed Route
- New Design Road
- Permanent Gabion Wall
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- Permanent Wet Crossing Concrete
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- Temporary Construction Limits
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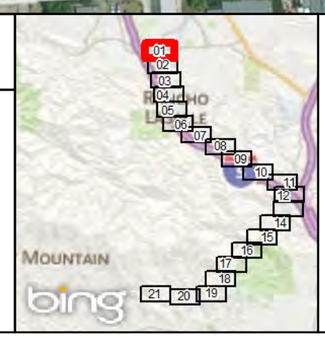
- Existing Roads
- Proposed Natural Substation
- Existing Pipe
- Permanent Grading Limit
- Temporary Grading Limit
- Permanent Crane Pad
- Temporary Crane Pad
- Existing ROW
- Proposed ROW



Notification #: 202564408 Date: 7/24/2014
File Name: RoadDisturbance_20140723_TSP2-TSP49

July 23, 2014

0 75 150 300 Feet

1 in = 200 feet

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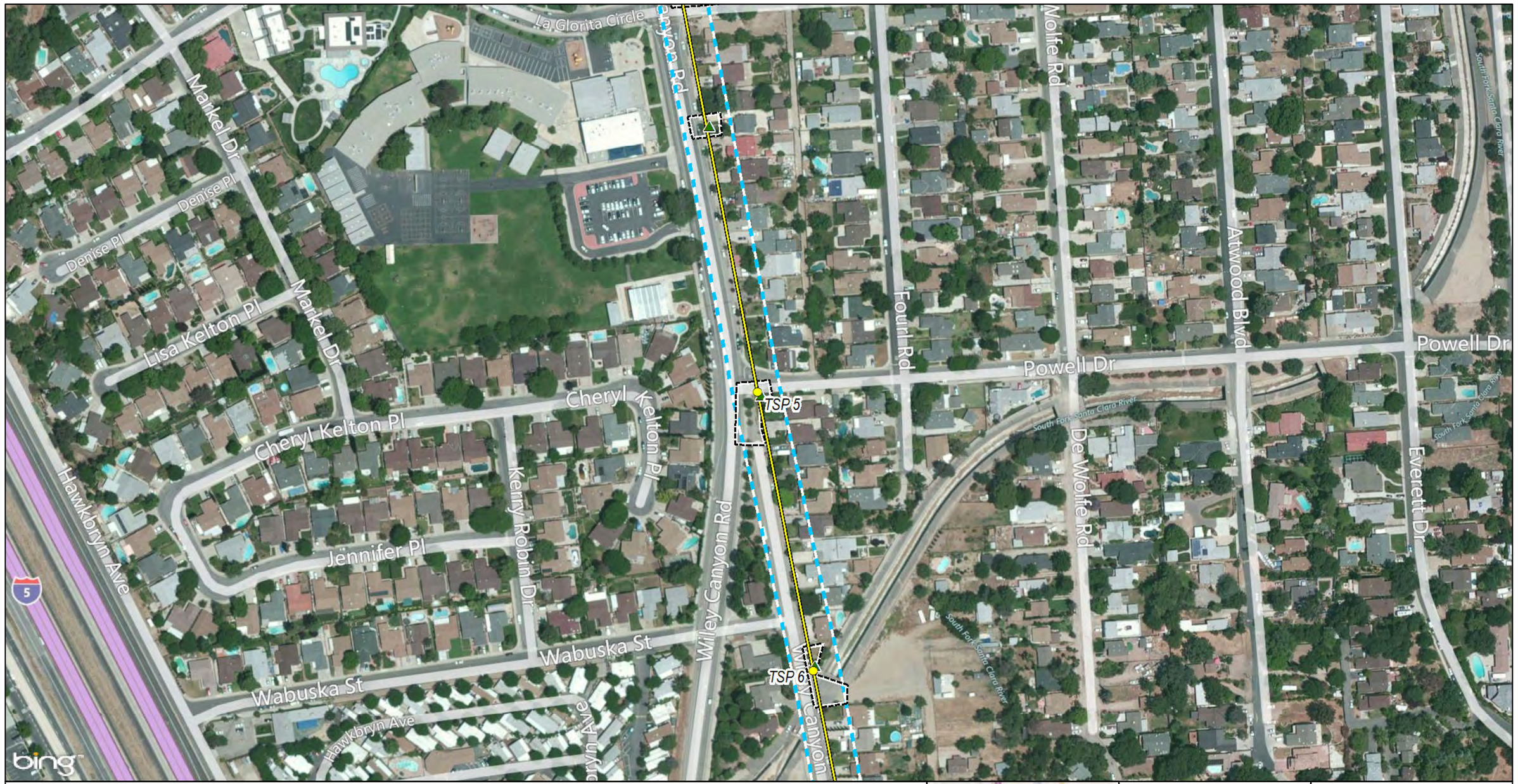

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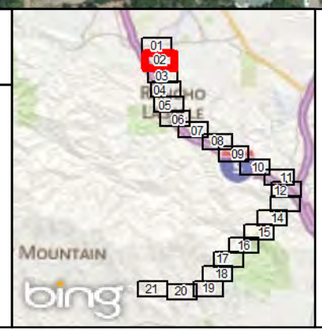

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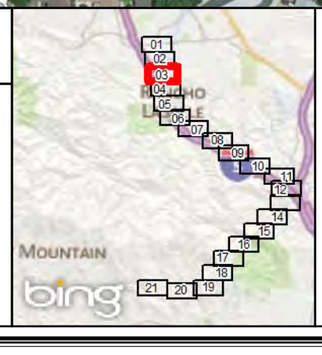

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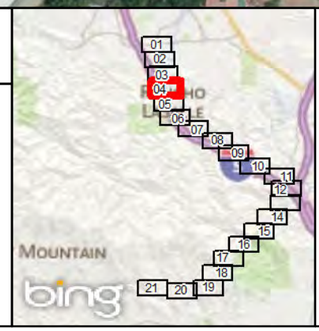

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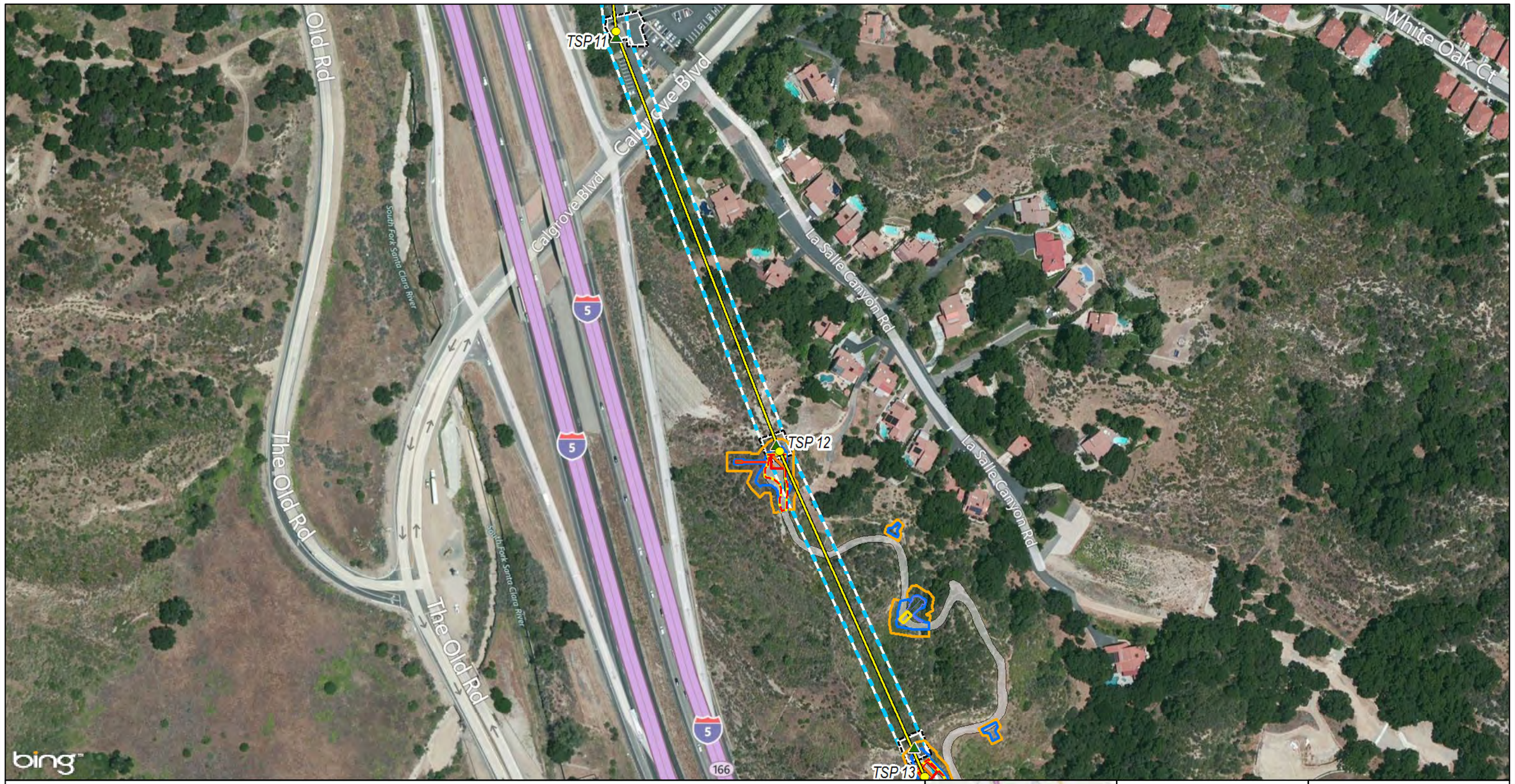

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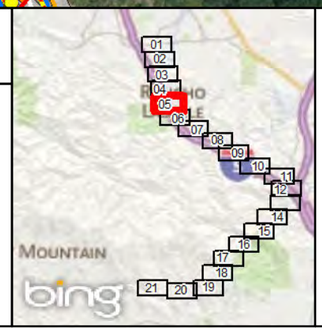

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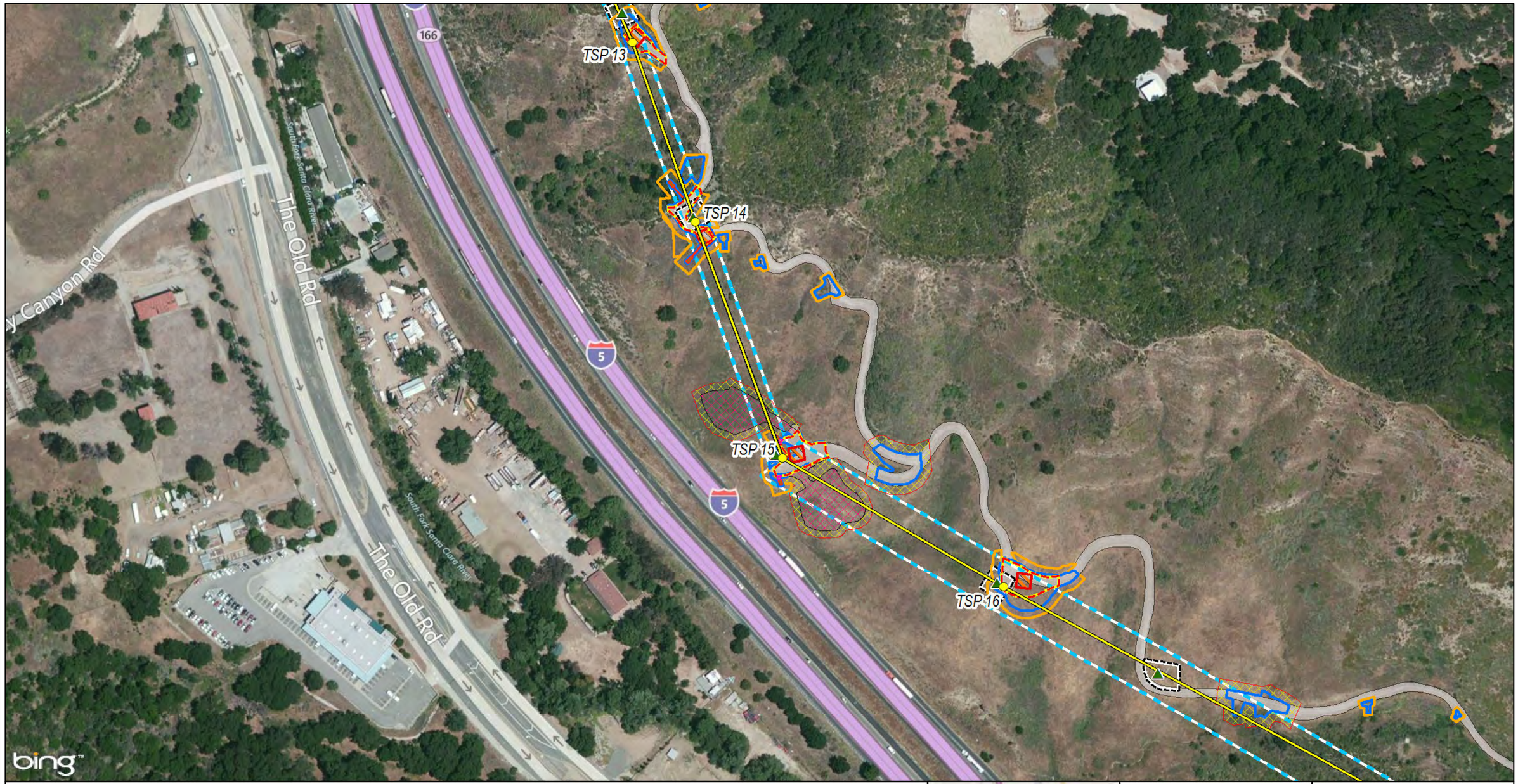

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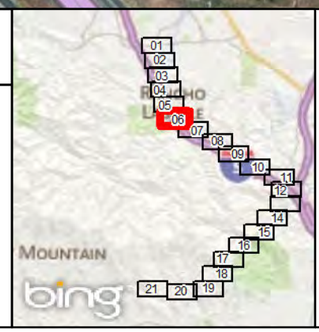

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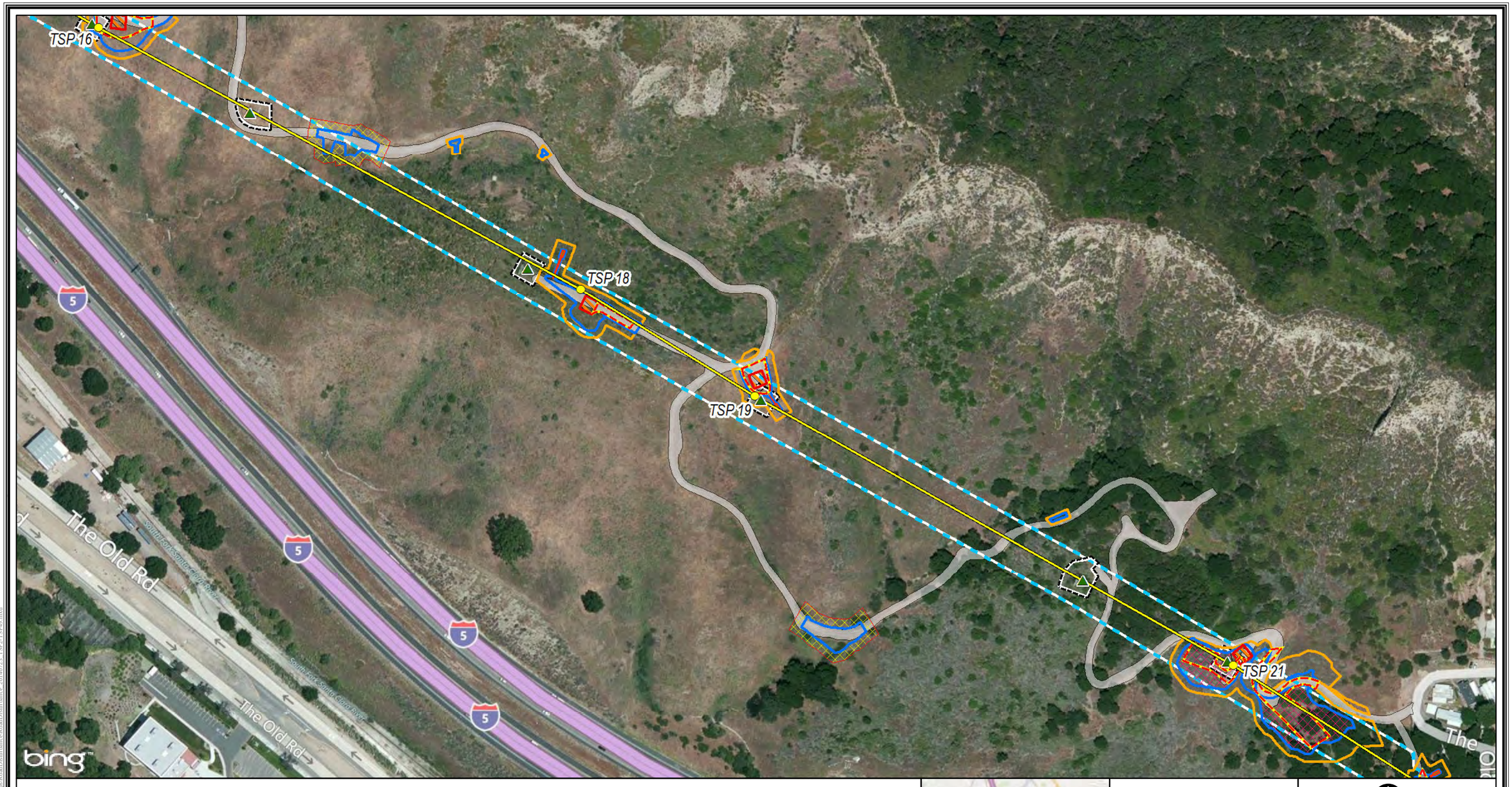

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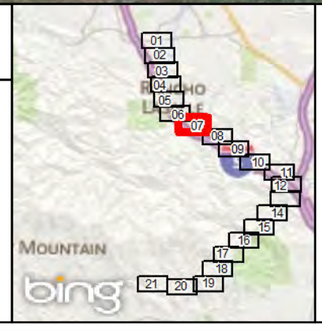

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July 23, 2014

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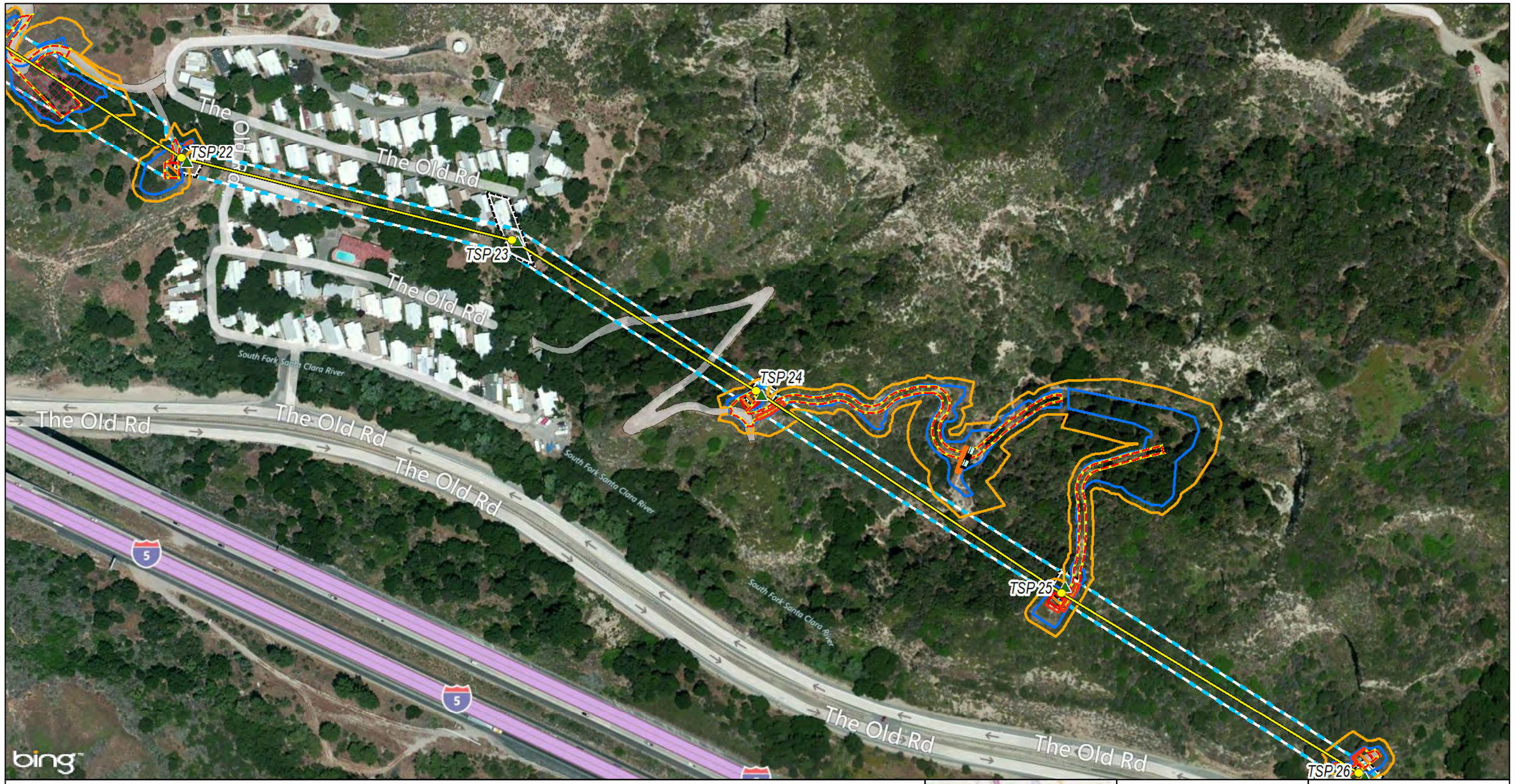

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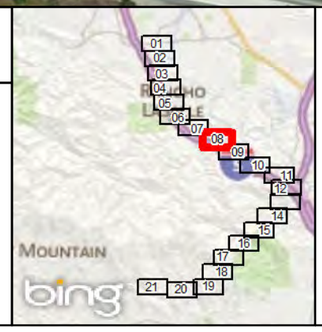

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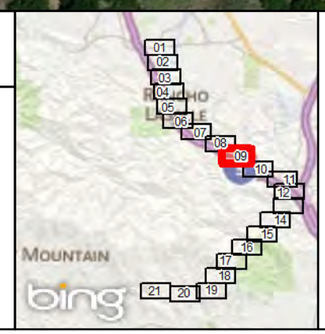

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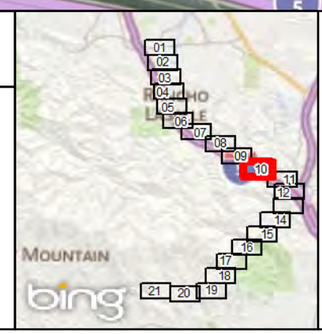

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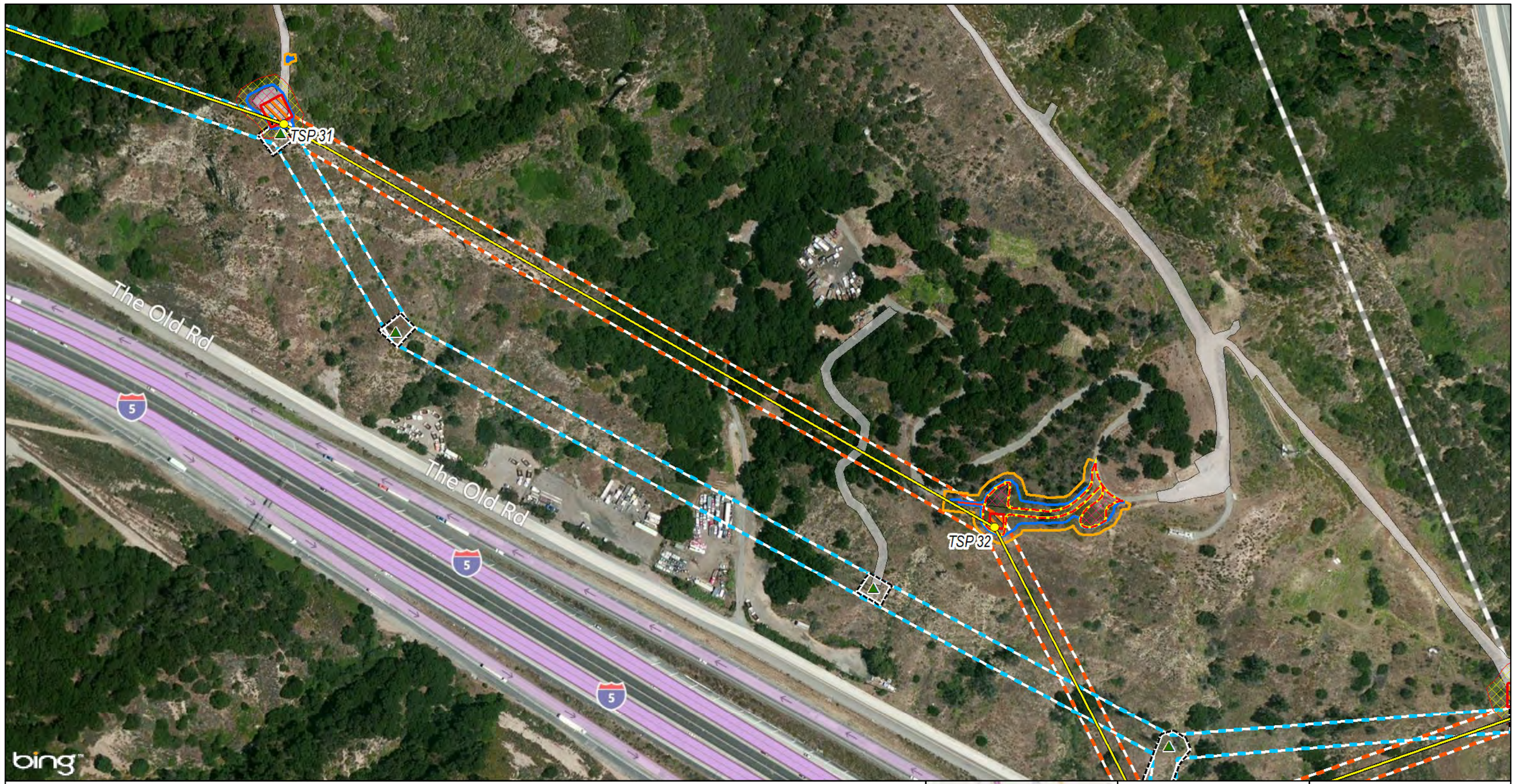

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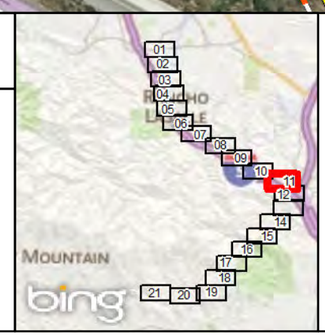

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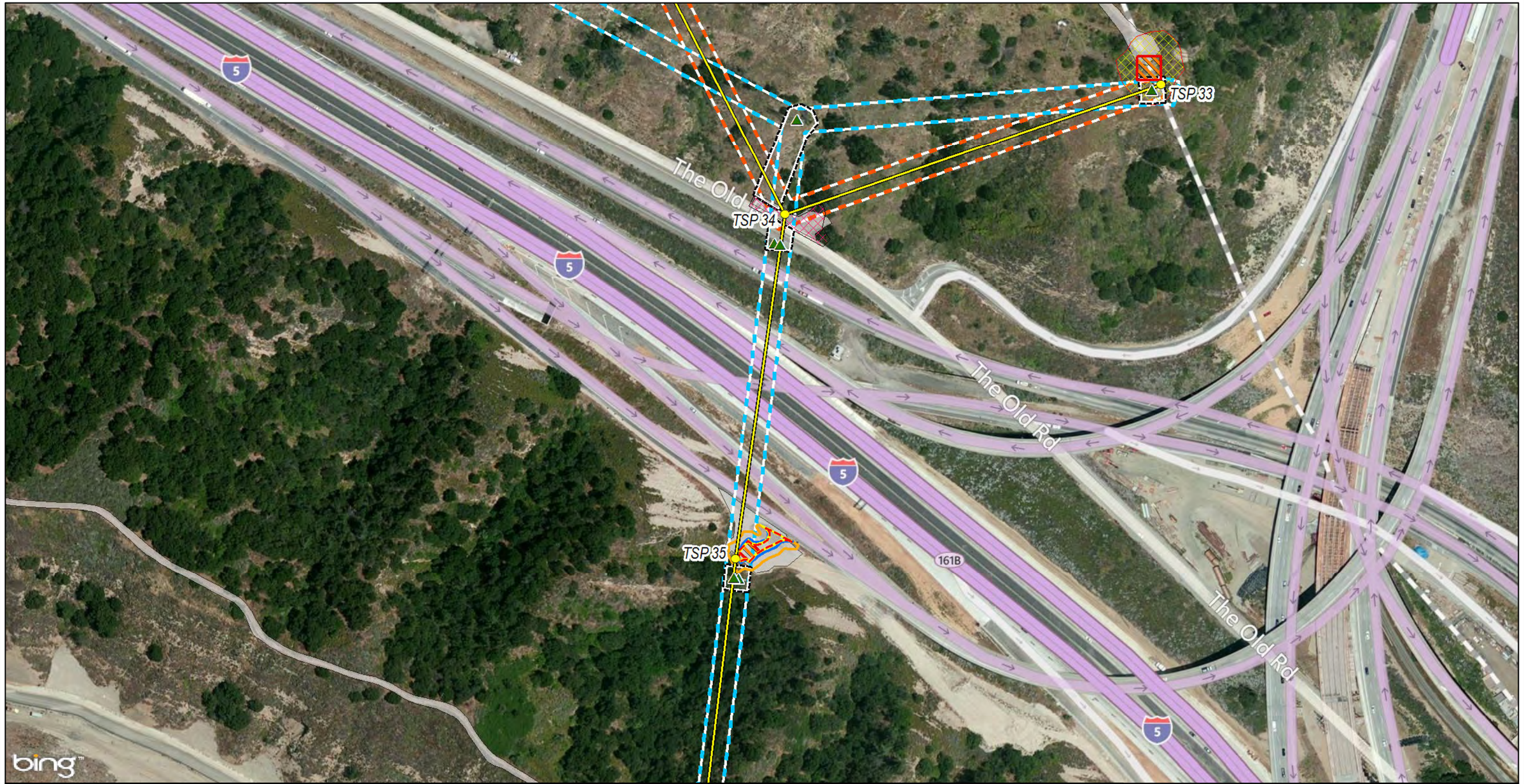

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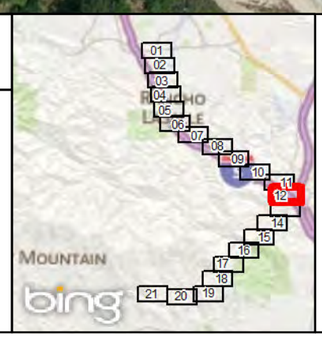

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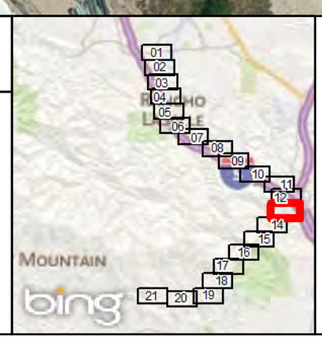

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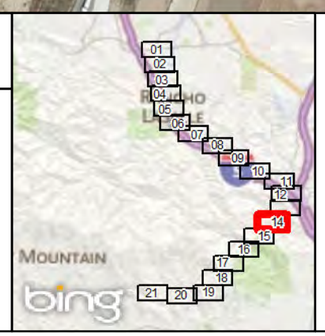
- Proposed ROW



Notification #: 202564408 Date: 7/24/2014
File Name: RoadDisturbance_20140723_TSP2-TSP49

July 23, 2014

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SCE 66-kV Subtransmission Line and Natural Substation Map Sheets

Aliso Canyon Turbine Replacement Project

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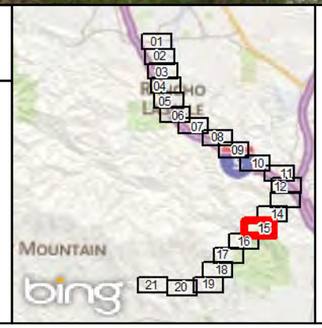

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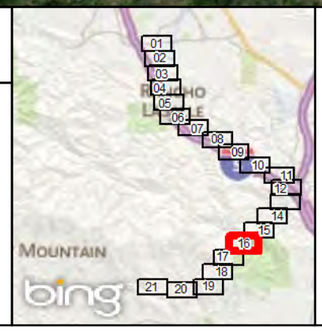

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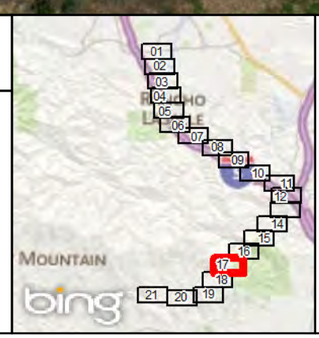

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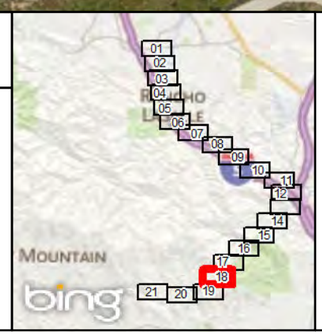

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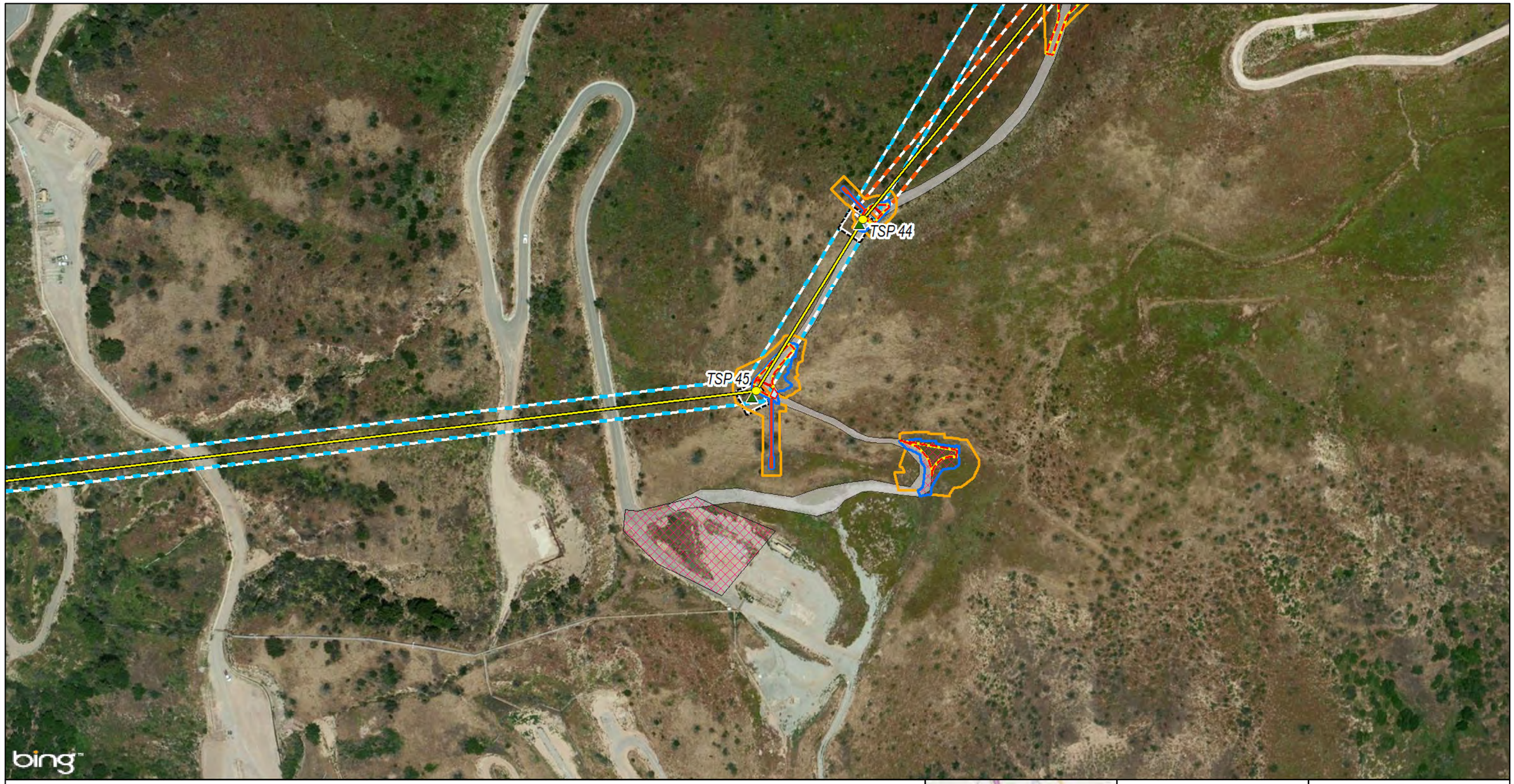

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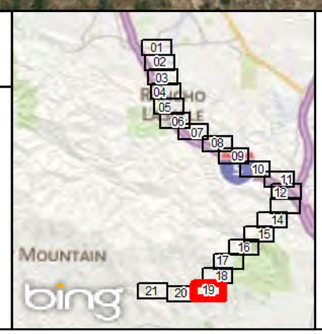

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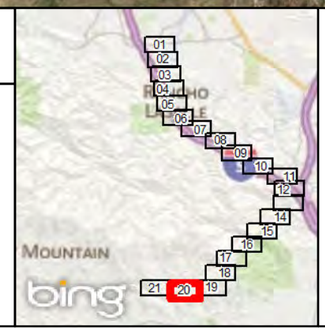

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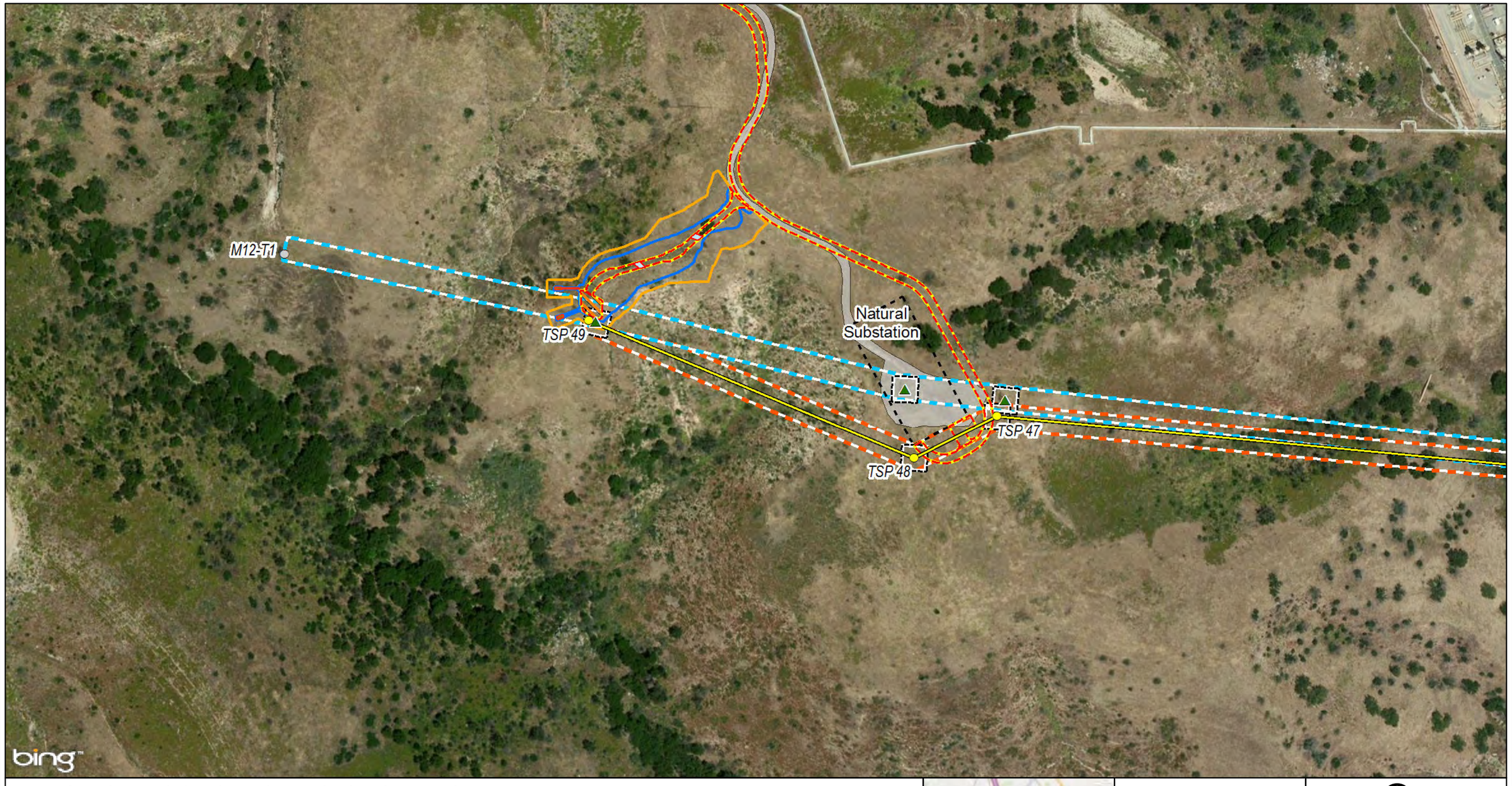

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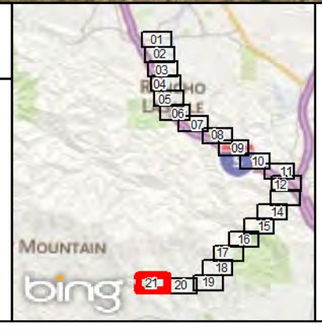

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Attachment 2

Updated Petition for Modification Attachment B, Appendix A, “Air Quality and Greenhouse Gas Calculation Sheets” (10/30/14)

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Table No.	**Title**	**Comments**
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3	Localized Significance Threshold Analysis	
4	GHG Emissions Summary	
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5a	Subtransmission Line Remove Existing Towers and Foundations - LST Analysis	
6	Subtransmission Line TSP Footing Installation	
6a	Subtransmission Line TSP Footing Installation - LST Analysis	
7	Subtransmission Line TSP Haul, Assembly, and Erection	
7a	Subtransmission Line TSP Haul, Assembly, and Erection - LST Analysis	
10	Subtransmission Vault, Duct Bank, and Conduit Installation	
10a	Subtransmission Vault, Duct Bank, and Conduit Installation - LST Analysis	
11	Subtransmission UG Cable Installation	
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13	Telecommunications Line Aboveground Work	
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20	Access and Spur Road Retaining Wall Installation	
21	Offroad Emission Factors	
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24	Motor Vehicle Entrained Road Dust Emission Factors	
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26	Peak Daily Subtransmission Line Construction Emissions	
27	Peak Daily Telecommunications Line Construction Emissions	

Table 1
Summary of Changes

Section 3.4: Reconfigure Subtransmisison Line at the San Fernando Substation

		Daily Emissions (lb/day)						GHG Emissions (MT)		
Scope	**Activity**	**ROG**	**CO**	**NO_x**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**	**Equipment CO2e**	**Motor Vehicle CO2e**	**Total CO2e**
	Subtransmission Line Remove Existing Towers and Foundations	15	55	132	0.15	6	5	7	0.24	7
	Subtransmission Line TSP Footing Installation	19	69	184	0.22	7	7	56	3.54	59
	Subtransmission Line TSP Haul, Assembly, and Erection	15	46	141	0.16	6	5	18	0.48	18
Replaced	Subtransmission Line Conductor Installation	17	48	162	0.19	6	5	7	0.33	7
Scope1	*Subtotal*	*66*	*217*	*620*	*0.73*	*25*	*22*	*87*	*4.59*	*92*
	Subtransmission Line Remove Existing Towers and Foundations	15	55	132	0.15	6	5	6	0.24	6
	Subtransmission Line TSP Footing Installation	19	69	184	0.22	7	7	35	2.22	37
	Subtransmission Line TSP Haul, Assembly, and Erection	15	46	141	0.16	6	5	11	0.32	11
	Subtransmission Vault, Duct Bank, and Conduit Installation	14	44	132	0.16	5	5	16	0.71	23
	Subtransmission UG Cable Installation	7	24	64	0.08	3	2	3	0.16	3
Updated	Subtransmission Line Conductor Installation	17	48	162	0.19	6	5	7	0.33	7
Scope	*Subtotal*	*87*	*284*	*816*	*0.96*	*33*	*29*	*78*	*3.97*	*82*
	INCREMENTAL CHANGE	**21**	**67**	**196**	**0.23**	**8**	**7**	**-9**	**-0.62**	**-10**

1 Replaced Scope refers to activities that were included in the previous evaluation and will be replaced by the updated scope.

Section 4.2: Replace Fewer Poles for Telecommunications Routes 2 and 3

		Daily Emissions (lb/day)						GHG Emissions (MT)		
Scope	**Activity**	**ROG**	**CO**	**NO_x**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**	**Equipment CO2e**	**Motor Vehicle CO2e**	**Total CO2e**
	Subtransmission Line Remove Existing Towers and Foundations	15	55	132	0.15	6	5	3	0.12	1
Updated	Subtransmission Line TSP Footing Installation	19	69	184	0.22	7	7	7	0.33	2
Scope	Subtransmission Line TSP Haul, Assembly, and Erection	15	46	141	0.16	6	5	8	0.65	2
	INCREMENTAL CHANGE	**50**	**169**	**458**	**0.54**	**19**	**17**	**17**	**1.10**	**18**

Section 4.3: Connect Telecommunications Route 1 into Sunshine Substation

		Daily Emissions (lb/day)						GHG Emissions (MT)		
Scope	**Activity**	**ROG**	**CO**	**NO_x**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**	**Equipment CO2e**	**Motor Vehicle CO2e**	**Total CO2e**
Updated	Telecommunications Line Aboveground Work	3	8	26	0.03	1	1	2	0.16	3
Scope	Telecommunications Line Belowground Work	3	8	26	0.03	1	1	2	0.16	3
	INCREMENTAL CHANGE	**6**	**16**	**52**	**0.06**	**2**	**2**	**5**	**0.32**	**5**

Section 5.0: Subtransmission Access and Spur Road Civil Engineering

		Daily Emissions (lb/day)						GHG Emissions (MT)		
Scope	**Activity**	**ROG**	**CO**	**NO_x**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**	**Equipment CO2e**	**Motor Vehicle CO2e**	**Total CO2e**
Replaced	Access and Spur Road Road and Landing Work	12	44	116	0.12	12	5	98	2	100
Scope	*Subtotal*	*12*	*44*	*116*	*0.12*	*12*	*5*	*98*	*2*	*100*
	Access and Spur Road Road and Landing Work	12	44	116	0.12	12	5	65	1	72
Updated	Access and Spur Road Retaining Wall Installation	22	68	215	0.27	8	7	1468	47	1515
Scope	*Subtotal*	*34*	*112*	*331*	*0.39*	*21*	*12*	*1533*	*47*	*1580*
	INCREMENTAL CHANGE	**22**	**68**	**215**	**0.27**	**8**	**7**	**1435**	**45**	**1480**

Table 2
Peak Daily Construction Emissions

Scenario[1]	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
4	22	68	215	0.27	8	7
5	21	67	196	0.23	8	7
6	25	75	220	0.27	9	8

[1] Emissions were calculated for seven scenarios in the FEIR. Each scenario includes a combination of construction activities that could occur at the same time.

Scenario 4 Daily Emissions

Scope	Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
	Access and Spur Road Road and Landing Work	12.13	44.40	115.59	0.12	12.37	4.56
	Subtransmission Line Remove Existing Towers and Foundations	15.23	54.51	132.19	0.15	6.06	5.46
	Subtransmission Line TSP Footing Installation	19.15	68.98	184.37	0.22	7.48	6.53
Replaced	*Subtotal*	*46.51*	*167.89*	*432.14*	*0.50*	*25.91*	*16.55*
	Access and Spur Road Road and Landing Work	12.13	44.40	115.59	0.12	12.37	4.56
	Access and Spur Road Retaining Wall Installation	21.85	68.04	215.45	0.27	8.20	7.30
	Subtransmission Line Remove Existing Towers and Foundations	15.23	54.51	132.19	0.15	6.06	5.46
	Subtransmission Line TSP Footing Installation	19.15	68.98	184.37	0.22	7.48	6.53
Updated	*Subtotal*	*68.37*	*235.93*	*647.59*	*0.77*	*34.11*	*23.85*
	INCREMENTAL CHANGE	**21.85**	**68.04**	**215.45**	**0.27**	**8.20**	**7.30**

Scenario 5 Daily Emissions

Scope	Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
	Subtransmission Line TSP Footing Installation	19.15	68.98	184.37	0.22	7.48	6.53
	Subtransmission Line TSP Haul, Assembly, and Erection	15.21	45.72	140.99	0.16	5.76	5.14
Replaced	*Subtotal*	*34.37*	*114.70*	*325.35*	*0.38*	*13.24*	*11.67*
	Subtransmission Line TSP Footing Installation	19.15	68.98	184.37	0.22	7.48	6.53
	Subtransmission Line TSP Haul, Assembly, and Erection	15.21	45.72	140.99	0.16	5.76	5.14
	Subtransmission Vault, Duct Bank, and Conduit Installation	14.26	43.69	132.33	0.16	5.30	4.75
	Subtransmission UG Cable Installation	6.95	23.54	63.94	0.08	2.69	2.31
Updated	*Subtotal*	*55.57*	*181.93*	*521.63*	*0.62*	*21.22*	*18.73*
	INCREMENTAL CHANGE	**21.20**	**67.23**	**196.28**	**0.23**	**7.98**	**7.06**

Scenario 6 Daily Emissions

Scope	Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
	Subtransmission Line Conductor Installation	16.70	47.64	162.48	0.19	6.08	5.27
Original	*Subtotal*	*16.70*	*47.64*	*162.48*	*0.19*	*6.08*	*5.27*
	Subtransmission Line Conductor Installation	16.70	47.64	162.48	0.19	6.08	5.27
	Telecommunications Line Aboveground Work	2.77	8.20	25.99	0.03	1.02	0.85
	Telecommunications Line Belowground Work	2.77	8.20	25.99	0.03	1.02	0.85
	Telecommunication Wood Pole Removal	6.54	18.68	59.52	0.07	2.32	2.01
	Telecommunication LWC Pole Haul	3.76	10.81	35.70	0.04	1.36	1.17
	Telecommunication Pole Assembly	3.54	11.34	27.86	0.04	1.27	1.01
	Telecommunication Install LWS Pole	5.27	18.10	44.77	0.05	2.17	1.88
Updated	*Subtotal*	*41.35*	*122.97*	*382.31*	*0.46*	*15.24*	*13.05*
	INCREMENTAL CHANGE	**24.65**	**75.33**	**219.83**	**0.27**	**9.16**	**7.78**

Table 3
Localized Significance Threshold Analysis

Construction Activity	Maximum Daily Onsite Emissions (pounds/day)				LST Level for Construction (pounds/day)			
	CO	NOx	PM10	PM2.5	CO	NOx	PM10	PM2.5
66-kV Subtransmission Line	31	87	3.60	3.20	590	114	4	3
Telecommunications	19	60	2.32	2.01	590	114	4	3

LST Analysis for the 66kV
(1 acre site; Nearest Receptor at 25 meters)[1]

	CO	NOx	PM10	PM2.5
Peak Daily Construction Emissions	31.01	86.75	3.60	3.20
NOx and CO LST	***590***	***114***	**--**	**--**
PM10 and PM2.5 Construction LST	**--**	**--**	***4***	***3***
Significant (Yes/No)?	**NO**	**NO**	**NO**	**YES**

1. Receptor distance is within 25 meters of 12 poles to be replaced within the alignment.

LST Analysis for the Telecommunication Line
(1 acre site; Nearest Receptor at 25 meters)

	CO	NOx	PM10	PM2.5
Peak Daily Construction Emissions	18.68	59.52	2.32	2.01
NOx and CO LST	***590***	***114***	**--**	**--**
PM10 and PM2.5 Construction LST	**--**	**--**	***4***	***3***
Significant (Yes/No)?	**NO**	**NO**	**NO**	**NO**

SCAQMD Localized Significance Threshold (LST) Values

	Allowable emissions (lb/day) as a function of receptor distance from Site Boundary														
Pollutant	**1 Acre**					**2 Acre**					**5 Acre**				
Receptor Distance (meters)	**25**	**50**	**100**	**200**	**500**	**25**	**50**	**100**	**200**	**500**	**25**	**50**	**100**	**200**	**500**
CO	590	879	1294	2500	8174	877	1256	1787	3108	8933	1644	2095	2922	4608	11049
NOx	114	115	133	173	273	163	159	172	204	291	246	236	251	275	345
PM_{10} Construction	4	12	25	51	131	6	19	32	59	139	12	38	52	79	161
PM_{10} Operation	1	3	6	13	32	2	5	8	15	34	3	10	13	19	39
$PM_{2.5}$ Construction	3	4	7	18	74	4	5	9	20	80	6	8	13	26	95
$PM_{2.5}$ Operation	1	1	2	5	18	1	2	2	5	20	2	2	3	7	23

Table 4
Construction Greenhouse Gas Emissions

Emissions Summary			
Construction Activity	**CO_2e (MT)[a]**		
	Replaced	**Updated**	**Total**
66 kV Subtransmission Line	92	82	
Telecommunications	0	34	
Access and Spur Road	100	1,581	
INCREMENTAL CHANGE	**191**	**1,697**	**1,506**

	CO_2e (MT)[a]		
Source	**Replaced**	**Updated**	**Total**
Equipment Exhaust	185	1,643	
Motor Vehicle Exhaust	7	54	
INCREMENTAL CHANGE	***191***	**1,697**	**1,506**

Construction Equipment Exhaust - 66kV Subtransmission											
				Replaced Scope				**Updated Scope -**			
Equipment	**Horse-Power**	**Hours/ Day Used**	**Number**	**Days Used**	**CO_2 (MT)[a]**	**CH4 (MT)[a]**	**CO_2e (MT)[a]**	**Days Used**	**CO_2 (MT)[a]**	**CH4 (MT)[a]**	**CO_2e (MT)[a]**
Subtransmission Line Remove Existing Towers and Foundations											
1-Ton Crew Cab, 4x4	300	5	2	2	1.5	0.000	1.51	2	1.5	0.000	1.51
10,000 lb/ Rough Terrain Forklift	200	4	1	2	0.2	0.000	0.20	2	0.2	0.000	0.20
30-Ton Crane	300	6	2	2	1.2	0.000	1.22	2	1.2	0.000	1.22
Compressor Trailer	120	8	2	2	1.2	0.000	1.18	2	1.2	0.000	1.18
Flat Bed Truck/Trailer	350	8	1	2	1.2	0.000	1.21	2	1.2	0.000	1.21
10-cu yd. Dump Truck	350	4	1	2	0.6	0.000	0.61	1	0.3	0.000	0.30
Backhoe/Front Loader	350	4	1	2	0.6	0.000	0.62	1	0.3	0.000	0.31
Subtransmission Line TSP Footing Installation											
1-Ton Crew Cab Flat Bed, 4x4	300	2	4	8	4.8	0.000	4.84	5	3.0	0.000	3.03
30-Ton Crane Truck	300	5	2	8	4.1	0.000	4.08	5	2.5	0.000	2.55
Backhoe	200	8	2	8	5.9	0.001	5.90	5	3.7	0.001	3.69
Auger Truck	500	6	2	8	11.9	0.001	11.88	5	7.4	0.001	7.43
4000 Gallon Water Truck	350	4	2	8	4.8	0.000	4.84	5	3.0	0.000	3.03
10-cu. yd. Dump Truck	350	5	2	8	6.0	0.001	6.05	5	3.8	0.001	3.79
10-cu. yd. Concrete Mixer Truck	425	5	6	8	18.1	0.002	18.16	5	11.3	0.002	11.37
Subtransmission Vault, Duct Bank, and Conduit Installation											
1-Ton Crew Cab, 4x4	300	4	2					3	1.8	0.000	1.82
Excavator	250	6	2					3	2.6	0.000	2.60
Dump Truck	350	8	2					3	3.6	0.000	3.63
Backhoe/Front Loader	125	4	1					3	0.3	0.000	0.28
Water Truck	350	8	1					3	1.2	0.000	1.16
30-Ton Crane Truck	500	6	1					3	2.2	0.000	2.23
Concrete Mixer Truck	350	2	3					3	1.4	0.000	1.36
Lowboy Truck/Trailer	450	4	1					3	0.6	0.000	0.58
Flat Bed Truck/Trailer	400	4	3					3	2.7	0.000	2.72
Subtransmission UG Cable Installation											
1-Ton Crew Cab Flat Bed, 4x4	300	4	2					1	0.6	0.000	0.61
Wire Truck/Trailer	350	6	2					1	0.9	0.000	0.91
Bucket Truck	250	6	1					1	0.5	0.000	0.45
Boom Truck	350	6	1					1	0.5	0.000	0.45
Puller	350	6	1					1	0.3	0.000	0.29
Static Truck/Tensioner	350	6	1					1	0.3	0.000	0.29
Subtransmission Line Conductor Installation											
3/4-Ton Pick-up	300	8	2	1	1.2	0.000	1.21	1	1.2	0.000	1.21
1-Ton Crew Cab Flat Bed, 4x4	300	8	4	1	2.4	0.000	2.42	1	2.4	0.000	2.42
Wire Truck/Trailer	350	2	2	1	0.3	0.000	0.30	1	0.3	0.000	0.30
Dump Truck	350	2	1	1	0.2	0.000	0.15	1	0.2	0.000	0.15
Bucket Truck	350	8	2	1	1.2	0.000	1.21	1	1.2	0.000	1.21
22-Ton Manitex	350	8	2	1	0.8	0.000	0.77	1	0.8	0.000	0.77
Splicing Rig	350	2	1	1	0.2	0.000	0.17	1	0.2	0.000	0.17
Splicing Lab	300	2	1	1	0.1	0.000	0.10	1	0.1	0.000	0.10
3 Drum Straw line Puller	300	6	1	1	0.3	0.000	0.29	1	0.3	0.000	0.29
Static Truck/Tensioner	350	6	1	1	0.3	0.000	0.29	1	0.3	0.000	0.29
Subtransmission Assembly											
3/4-Ton Pick-up Truck, 4x4	300	5	5	3	5.7	0.001	5.68	2	3.8	0.001	3.79
1-Ton Crew Cab Flat Bed, 4x4	300	5	4	3	4.5	0.000	4.54	2	3.0	0.000	3.03
Compressor Trailer	120	5	2	3	1.1	0.000	1.10	2	0.7	0.000	0.74
80-Ton Rough Terrain Crane	350	6	3	3	2.7	0.000	2.75	2	1.8	0.000	1.84
40' Flat Bed Truck/Trailer	350	8	2	3	3.6	0.000	3.63	1	1.2	0.000	1.22
TOTAL							**86.9**				**77.7**

[a] Emissions [metric tons, MT] = Emission factor [lb/hr] x Operating time [hr/day] x Number x Days used [days] x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 22

Motor Vehicle Exhaust - 66kV Subtransmission										
			Replaced Scope				Updated Scope			
Vehicle Type	Miles/ Day per Vehicle	Number	Days Used	CO_2 (MT)[a]	CH4 (MT)[a]	CO_2e (MT)[a]	Days Used	CO_2 (MT)[a]	CH4 (MT)[a]	CO_2e (MT)[a]
Subtransmission Line Remove Existing										
Worker Commuting	40	6	2	0.24	0.00	0.24	2	0.24	0.00	0.24
Subtransmission Line TSP Footing										
Water Truck	20	2	8	0.61	0.00	0.61	5	0.38	0.00	0.38
Crew Truck	20	2	8	0.40	0.00	0.40	5	0.25	0.00	0.25
Concrete Truck	20	1	8	0.31	0.00	0.31	5	0.19	0.00	0.19
Worker Commuting	40	14	8	2.23	0.00	2.23	5	1.39	0.00	1.39
Subtransmission Vault, Duct Bank, and Conduit Installation										
Crew Truck	0.35	6					3	0.01	0.00	0.01
Worker Commuting	40	6					3	0.36	0.00	0.36
Water Truck	20	2					3	0.23	0.00	0.23
Concrete Truck	20	1					3	0.11	0.00	0.11
Subtransmission UG Cable Installation										
Crew Truck	0.35	8					1	0.00	0.00	0.00
Worker Commuting	40	8					1	0.16	0.00	0.16
Subtransmission Line Conductor Installation										
Crew Truck	0.35	16	1	0.01	0.00	0.01	1	0.01	0.00	0.01
Worker Commuting	40	16	1	0.32	0.00	0.32	1	0.32	0.00	0.32
Subtransmission Line TSP Haul, Assembly, and Erection										
Worker Commuting	40	8	3	0.48	0.00	0.48	2	0.32	0.00	0.32
TOTAL						**4.6**				**4.0**

[a] Emissions [metric tons, MT] = Emission factor [lb/mi] x Distance per vehicle [mi/day] x Number vehicles x Days used *453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 23

Construction Equipment Exhaust - Telecommunications											
				Replaced Scope				Updated Scope -			
Equipment	Horse-Power	Hours/ Day Used	Number	Days Used	CO_2 (MT)[a]	CH4 (MT)[a]	CO_2e (MT)[a]	Days Used	CO_2 (MT)[a]	CH4 (MT)[a]	CO_2e (MT)[a]
Telecommunications Line Aboveground Work											
Reel Truck	300	8	1					2	1.2	0.0	1.21
Bucket Truck	350	8	1					2	1.2	0.0	1.21
Telecommunications Line Belowground Work											
Reel Truck	300	8	1					2	1.2	0.0	1.21
Bucket Truck	350	8	1					2	1.2	0.0	1.21
Telecommunication Wood Pole Removal											
1-Ton Crew Cab Flat Bed, 4x4	300	8	2					1	1.2	0.0	1.21
Bucket Truck	250	6	1					1	0.5	0.0	0.45
Compressor Trailer	60	4	1					1	0.1	0.0	0.05
Boom Truck	350	6	1					1	0.5	0.0	0.45
Flat Bed Truck/Trailer	400	8	1					1	0.6	0.0	0.61
Telecommunication LWC Pole Haul											
3/4-Ton Pick-up Truck, 4x4	275	8	1					4	2.4	0.0	2.42
Boom Truck	350	6	1					4	1.8	0.0	1.82
Flat Bed Truck/Trailer	400	8	1					4	2.4	0.0	2.42
Telecommunication Pole Assembly											
3/4-Ton Pick-up Truck, 4x4	275	4	2					4	2.4	0.0	2.42
1-Ton Crew Cab Flat Bed, 4x4	300	4	2					4	2.4	0.0	2.42
Compressor Trailer	60	6	1					4	0.3	0.0	0.31
Boom Truck	350	8	1					4	2.4	0.0	2.42
Telecommunication Install LWS Pole											
1-Ton Crew Cab Flat Bed, 4x4	300	8	1					4	2.4	0.0	2.42
Bucket Truck	250	6	1					4	1.8	0.0	1.82
Boom Truck	350	6	1					4	1.8	0.0	1.82
Auger Truck	210	6	1					4	1.4	0.0	1.37
Backhoe/Front loader	125	8	1					4	0.8	0.0	0.75
Flat Bed Truck/Trailer	400	8	1					4	2.4	0.0	2.42
TOTAL							**0.00**				**32.45**

[a] Emissions [metric tons, MT] = Emission factor [lb/hr] x Operating time [hr/day] x Number x Days used [days] x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 22

Motor Vehicle Exhaust - Telecommunications										
			Replaced Scope				Updated Scope -			
Vehicle Type	Miles/ Day per Vehicle	Number	Days Used	CO_2 (MT)[a]	CH4 (MT)[a]	CO_2e (MT)[a]	Days Used	CO_2 (MT)[a]	CH4 (MT)[a]	CO_2e (MT)[a]
Telecommunications Line Aboveground Work										
Worker Commuting	40	4					2	0.16	0.00	0.16
Telecommunications Line Belowground Work										
Worker Commuting	40	4					2	0.16	0.00	0.16
Telecommunication Wood Pole Removal										
Crew Truck	0.35	6					1	0.00	0.00	0.00
Worker Commuting	40	6					1	0.12	0.00	0.12
Telecommunication LWC Pole Haul										
Crew Truck	0.35	4					4	0.01	0.00	0.01
Worker Commuting	40	4					4	0.32	0.00	0.32
Telecommunication Pole Assembly										
Crew Truck	0.35	8					4	0.01	0.00	0.01
Worker Commuting	40	8					4	0.64	0.00	0.64
Telecommunication Install LWS Pole										
Crew Truck	0.35	6					4	0.01	0.00	0.01
Worker Commuting	40	6					4	0.48	0.00	0.48
TOTAL						**0.0**				**1.9**

[a] Emissions [metric tons, MT] = Emission factor [lb/mi] x Distance per vehicle [mi/day] x Number vehicles x Days used *453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 23

Construction Equipment Exhaust - Access and Spur Road											
					Replaced Scope			Updated Scope -			
Equipment	Horse-Power	Hours/ Day Used	Number	Days Used	CO_2 (MT)[a]	CH4 (MT)[a]	CO_2e (MT)[a]	Days Used	CO_2 (MT)[a]	CH4 (MT)[a]	CO_2e (MT)[a]
Access and Spur Road Road and Landing Work											
1-Ton Crew Cab, 4x4	500	2	2	35	17.3	0.001	17.32	20	9.9	0.001	9.91
Road Grader	500	4	1	35	8.4	0.001	8.45	20	4.8	0.001	4.84
Water Truck	350	8	2	35	27.1	0.003	27.11	20	15.5	0.003	15.52
Backhoe/Front Loader	500	6	1	35	32.8	0.002	32.90	20	18.8	0.002	18.82
Drum Type Compactor	0	4	1	35	0.3	0.000	0.27	20	0.2	0.000	0.16
Track Type Dozer	350	6	1	3	1.5	0.000	1.50	20	10.0	0.000	9.99
Excavator	500	6	1	18	5.9	0.001	5.87	10	3.3	0.001	3.27
Lowboy Truck/Trailer	500	2	1	18	4.2	0.000	4.16	10	2.3	0.000	2.31
Access and Spur Road Retaining Wall Installation											
1-Ton Crew Cab, 4x4	300	8	2					150	181.3	0.000	181.31
Boom Truck	350	8	2					150	181.3	0.000	181.31
Drill Rig	250	8	2					150	204.8	0.000	204.78
Backhoe/Front Loader	350	6	1					150	70.1	0.000	70.11
Wheel Loader	250	8	2					150	187.0	0.000	186.96
Dump Truck	350	8	4					150	362.6	0.000	362.62
Water Truck	350	10	2					150	144.9	0.000	144.95
Concrete Mixer Truck	350	4	6					75	136.0	0.000	135.98
TOTAL							**97.6**				**1,532.8**

Motor Vehicle Exhaust - Access and Spur Road										
				Replaced Scope			Updated Scope			
Vehicle Type	Miles/ Day per Vehicle	Number	Days Used	CO_2 (MT)[a]	CH4 (MT)[a]	CO_2e (MT)[a]	Days Used	CO_2 (MT)[a]	CH4 (MT)[a]	CO_2e (MT)[a]
Access and Spur Road Road and Landing Work										
Worker Commuting	40	3	35	2.09	0.00	2.09	20	1.19	0.00	1.19
Access and Spur Road Retaining Wall Installation										
Worker Commuting	40	12					150	35.78	0.00	35.84
Water Truck	20	1					150	5.73	0.00	5.73
Concrete Truck	20	1					150	5.73	0.00	5.73
TOTAL						**2.1**				**48.5**

Table 5
Subtransmission Line Remove Existing Towers and Foundations

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	15.01	52.53	131.96	0.15	5.92	5.44
Vehicle Exhaust	0.22	1.98	0.22	0.00	0.02	0.01
Vehicle Fugitive	--	--	--	--	0.12	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**15.23**	**54.51**	**132.19**	**0.15**	**6.06**	**5.46**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
1-Ton Crew Cab, 4x4	300	5	2	1.64	4.30	16.15	0.02	0.57	0.53
1-Ton Crew Cab, 4x4	300	8	1	1.64	4.30	16.15	0.02	0.57	0.53
10,000 lb/ Rough Terrain Forklift	200	4	1	0.66	2.92	5.15	0.01	0.30	0.28
30-Ton Crane	300	6	2	1.49	4.16	14.85	0.02	0.56	0.52
Compressor Trailer	120	8	2	2.77	12.20	20.47	0.02	1.23	1.14
Compressor Trailer	120	6	1	2.77	12.20	20.47	0.02	1.23	1.14
Flat Bed Truck/Trailer	350	8	1	1.99	6.03	18.55	0.02	0.70	0.64
10-cu yd. Dump Truck	350	4	1	1.00	3.02	9.28	0.01	0.35	0.32
Backhoe/Front Loader	350	4	1	1.05	3.40	10.90	0.02	0.39	0.36
Total Equipment Exhaust				**15.01**	**52.53**	**131.96**	**0.15**	**5.92**	**5.44**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 22

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	40	6	0.22	1.98	0.22	0.00	0.02	0.01
Total Vehicle Exhaust			**0.22**	**1.98**	**0.22**	**0.00**	**0.02**	**0.01**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 23

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	Paved	40	6	0.12	0.00
Worker Commuting	Unpaved	0	6	0.00	0.00
Total Vehicle Fugitive				**0.12**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 24

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 25

Table 5a
Subtransmission Line Remove Existing Towers and Foundations - LST Analysis

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	7.14	23.97	65.18	0.08	2.75	2.53
Vehicle Exhaust	0.22	1.98	0.22	0.00	0.02	0.01
Vehicle Fugitive	--	--	--	--	0.12	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**7.36**	**25.95**	**65.40**	**0.08**	**2.89**	**2.54**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
1-Ton Crew Cab, 4x4	300	8	1	1.31	3.44	12.92	0.01	0.46	0.42
10,000 lb/ Rough Terrain Forklift	200	4	1	0.66	2.92	5.15	0.01	0.30	0.28
30-Ton Crane	300	6	1	0.75	2.08	7.42	0.01	0.28	0.26
Compressor Trailer	120	8	1	1.39	6.10	10.24	0.01	0.62	0.57
Flat Bed Truck/Trailer	350	4	1	1.00	3.02	9.28	0.01	0.35	0.32
10-cu yd. Dump Truck	350	4	1	1.00	3.02	9.28	0.01	0.35	0.32
Backhoe/Front Loader	350	4	1	1.05	3.40	10.90	0.02	0.39	0.36
Total Equipment Exhaust				**7.14**	**23.97**	**65.18**	**0.08**	**2.75**	**2.53**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 22

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	40	6	0.22	1.98	0.22	0.00	0.02	0.01
Total Vehicle Exhaust			**0.22**	**1.98**	**0.22**	**0.00**	**0.02**	**0.01**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 23

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	Paved	40	6	0.12	0.00
Worker Commuting	Unpaved	0	6	0.00	0.00
Total Vehicle Fugitive				**0.12**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 24

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 25

Table 6
Subtransmission Line TSP Footing Installation

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	18.35	62.89	180.74	0.21	6.93	6.38
Vehicle Exhaust	0.80	6.08	3.63	0.01	0.19	0.15
Vehicle Fugitive	--	--	--	--	0.34	0.00
Earthwork Fugitive	--	--	--	--	0.02	0.00
Total	**19.15**	**68.98**	**184.37**	**0.22**	**7.48**	**6.53**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
1-Ton Crew Cab Flat Bed, 4x4	300	2	4	1.99	6.03	18.55	0.02	0.70	0.64
30-Ton Crane Truck	300	5	2	1.82	6.62	17.72	0.02	0.68	0.63
Backhoe	200	8	2	1.95	9.41	15.43	0.02	0.90	0.83
Auger Truck	500	6	2	2.99	9.05	27.83	0.03	1.05	0.96
4000 Gallon Water Truck	350	4	2	1.99	6.03	18.55	0.02	0.70	0.64
10-cu. yd. Dump Truck	350	5	2	2.49	7.54	23.19	0.03	0.87	0.80
10-cu. yd. Concrete Mixer Truck	425	5	6	5.12	18.20	59.46	0.07	2.03	1.87
Total Equipment Exhaust				**18.35**	**62.89**	**180.74**	**0.21**	**6.93**	**6.38**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 22

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Water Truck	20	2	0.12	0.48	1.53	0.00	0.07	0.06
Crew Truck	20	2	0.10	0.74	0.82	0.00	0.03	0.03
Concrete Truck	20	1	0.06	0.24	0.76	0.00	0.04	0.03
Worker Commuting	40	14	0.51	4.63	0.51	0.01	0.05	0.03
Total Vehicle Exhaust			**0.80**	**6.08**	**3.63**	**0.01**	**0.19**	**0.15**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 23

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Water Truck	Paved	20	2	0.02	0.00
Water Truck	Unpaved	0	2	0.00	0.00
Crew Truck	Paved	20	2	0.02	0.00
Crew Truck	Unpaved	0	2	0.00	0.00
Concrete Truck	Paved	20	1	0.01	0.00
Concrete Truck	Unpaved	0	1	0.00	0.00
Worker Commuting	Paved	40	14	0.29	0.00
Worker Commuting	Unpaved	0	14	0.00	0.00
Total Vehicle Fugitive				**0.34**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 24

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Soil Dropping[b]	CY/Day	22	0.02	0.00
Total Earthwork Fugitive			**0.02**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 25

Table 6a
Subtransmission Line TSP Footing Installation

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	6.97	23.87	65.91	0.08	2.61	2.40
Vehicle Exhaust	0.69	5.47	2.46	0.01	0.14	0.11
Vehicle Fugitive	--	--	--	--	0.32	0.00
Earthwork Fugitive	--	--	--	--	0.02	0.00
Total	**7.66**	**29.35**	**68.36**	**0.08**	**3.09**	**2.52**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
1-Ton Crew Cab Flat Bed, 4x4	300	2	1	0.50	1.51	4.64	0.01	0.17	0.16
30-Ton Crane Truck	300	5	1	0.91	3.31	8.86	0.01	0.34	0.32
Backhoe	200	8	1	0.97	4.70	7.72	0.01	0.45	0.41
Auger Truck	500	6	1	1.50	4.52	13.91	0.02	0.52	0.48
4000 Gallon Water Truck	350	4	1	1.00	3.02	9.28	0.01	0.35	0.32
10-cu. yd. Dump Truck	350	5	1	1.25	3.77	11.59	0.01	0.44	0.40
10-cu. yd. Concrete Mixer Truck	425	5	1	0.85	3.03	9.91	0.01	0.34	0.31
Total Equipment Exhaust				**6.97**	**23.87**	**65.91**	**0.08**	**2.61**	**2.40**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 22

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Water Truck	20	1	0.06	0.24	0.76	0.00	0.04	0.03
Crew Truck	20	1	0.05	0.37	0.41	0.00	0.02	0.01
Concrete Truck	20	1	0.06	0.24	0.76	0.00	0.04	0.03
Worker Commuting	40	14	0.51	4.63	0.51	0.01	0.05	0.03
Total Vehicle Exhaust			**0.69**	**5.47**	**2.46**	**0.01**	**0.14**	**0.11**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 23

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Water Truck	Paved	20	1	0.01	0.00
Water Truck	Unpaved	0	1	0.00	0.00
Crew Truck	Paved	20	1	0.01	0.00
Crew Truck	Unpaved	0	1	0.00	0.00
Concrete Truck	Paved	20	1	0.01	0.00
Concrete Truck	Unpaved	0	1	0.00	0.00
Worker Commuting	Paved	40	14	0.29	0.00
Worker Commuting	Unpaved	0	14	0.00	0.00
Total Vehicle Fugitive				**0.32**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 24

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Soil Dropping[b]	CY/Day	22	0.02	0.00
Total Earthwork Fugitive			**0.02**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 25

Table 7
Subtransmission Line TSP Haul, Assembly, and Erection

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	14.92	43.08	140.69	0.16	5.57	5.12
Vehicle Exhaust	0.29	2.64	0.29	0.00	0.03	0.02
Vehicle Fugitive	--	--	--	--	0.16	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**15.21**	**45.72**	**140.99**	**0.16**	**5.76**	**5.14**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
3/4-Ton Pick-up Truck, 4x4	300	5	5	4.10	10.75	40.37	0.05	1.44	1.32
1-Ton Crew Cab Flat Bed, 4x4	300	5	4	3.28	8.60	32.30	0.04	1.15	1.06
Compressor Trailer	120	5	2	1.32	5.42	8.65	0.01	0.74	0.68
80-Ton Rough Terrain Crane	350	6	3	2.24	6.23	22.27	0.02	0.85	0.78
40' Flat Bed Truck/Trailer	350	8	2	3.99	12.07	37.10	0.04	1.39	1.28
Total Equipment Exhaust				**14.92**	**43.08**	**140.69**	**0.16**	**5.57**	**5.12**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 22

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	40	8	0.29	2.64	0.29	0.00	0.03	0.02
Total Vehicle Exhaust			**0.29**	**2.64**	**0.29**	**0.00**	**0.03**	**0.02**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 23

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	Paved	40	8	0.16	0.00
Worker Commuting	Unpaved	0	8	0.00	0.00
Total Vehicle Fugitive				**0.16**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 24

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 25

Table 7a
Subtransmission Line TSP Haul, Assembly, and Erection - LST Analysis

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	5.04	15.12	46.45	0.05	1.92	1.77
Vehicle Exhaust	0.29	2.64	0.29	0.00	0.03	0.02
Vehicle Fugitive	--	--	--	--	0.16	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**5.33**	**17.77**	**46.74**	**0.06**	**2.12**	**1.79**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
3/4-Ton Pick-up Truck, 4x4	300	5	1	0.82	2.15	8.07	0.01	0.29	0.26
1-Ton Crew Cab Flat Bed, 4x4	300	5	1	0.82	2.15	8.07	0.01	0.29	0.26
Compressor Trailer	120	5	1	0.66	2.71	4.32	0.00	0.37	0.34
80-Ton Rough Terrain Crane	350	6	1	0.75	2.08	7.42	0.01	0.28	0.26
40' Flat Bed Truck/Trailer	350	8	1	1.99	6.03	18.55	0.02	0.70	0.64
Total Equipment Exhaust				**5.04**	**15.12**	**46.45**	**0.05**	**1.92**	**1.77**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 22

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	40	8	0.29	2.64	0.29	0.00	0.03	0.02
Total Vehicle Exhaust			**0.29**	**2.64**	**0.29**	**0.00**	**0.03**	**0.02**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 23

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	Paved	40	8	0.16	0.00
Worker Commuting	Unpaved	0	8	0.00	0.00
Total Vehicle Fugitive				**0.16**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 24

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 25

Table 10
Subtransmission Vault, Duct Bank, and Conduit Installation

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	14.03	41.67	132.07	0.15	5.15	4.74
Vehicle Exhaust	0.22	2.02	0.26	0.00	0.02	0.01
Vehicle Fugitive	--	--	--	--	0.12	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**14.26**	**43.69**	**132.33**	**0.16**	**5.30**	**4.75**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
1-Ton Crew Cab, 4x4	300	4	2	1.31	3.44	12.92	0.01	0.46	0.42
Excavator	250	6	2	1.74	4.72	17.92	0.02	0.62	0.57
Dump Truck	350	8	2	2.62	6.88	25.84	0.03	0.92	0.85
Backhoe/Front Loader	125	4	1	0.36	1.45	2.27	0.00	0.21	0.19
Water Truck	350	8	1	0.93	4.72	7.94	0.01	0.43	0.40
30-Ton Crane Truck	500	6	1	1.50	4.52	13.91	0.02	0.52	0.48
Concrete Mixer Truck	350	2	3	0.98	2.58	9.69	0.01	0.34	0.32
Lowboy Truck/Trailer	450	4	1	0.47	2.36	3.97	0.00	0.22	0.20
Flat Bed Truck/Trailer	400	4	3	1.97	5.16	19.38	0.02	0.69	0.63
Pipe Truck/Trailer	275	6	1	0.98	2.58	9.69	0.01	0.34	0.32
Compressor Trailer	60	4	1	0.41	1.17	1.11	0.00	0.11	0.10
80-Ton Rough Terrain Crane	350	6	1	0.75	2.08	7.42	0.01	0.28	0.26
Total Equipment Exhaust				**14.03**	**41.67**	**132.07**	**0.15**	**5.15**	**4.74**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]	
Crew Truck	0.35	6	0.01	0.04	0.04	0.00	0.00	0.00	
Worker Commuting	40	6	0.22	1.98	0.22	0.00	0.02	0.01	
Water Truck	20	2	0.12	0.48	1.53	0.00	0.07	0.06	
Concrete Truck	20	1	0.06	0.24	0.76	0.00	0.04	0.03	
Total Vehicle Exhaust			**0.22**	**2.02**	**0.26**	**0.00**	**0.02**	**0.01**	

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 23

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Crew Truck	Paved	0.35	6	0.00	0.00
Crew Truck	Unpaved	0	6	0.00	0.00
Worker Commuting	Paved	40	6	0.12	0.00
Worker Commuting	Unpaved	0	6	0.00	0.00
Water Truck	Paved	20	2	0.02	0.00
Water Truck	Unpaved	0	2	0.00	0.00
Concrete Truck	Paved	20	1	0.01	0.00
Concrete Truck	Unpaved	0	1	0.00	0.00
Total Vehicle Fugitive				**0.12**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 24

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 25

Table 10a
Subtransmission Vault, Duct Bank, and Conduit Installation

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	9.23	28.99	84.35	0.10	3.46	3.18
Vehicle Exhaust	0.22	2.02	0.26	0.00	0.02	0.01
Vehicle Fugitive	--	--	--	--	0.12	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**9.45**	**31.01**	**84.61**	**0.10**	**3.60**	**3.20**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
1-Ton Crew Cab, 4x4	300	4	1	0.66	1.72	6.46	0.01	0.23	0.21
Excavator	250	6	1	0.87	2.36	8.96	0.01	0.31	0.29
Dump Truck	350	8	1	1.31	3.44	12.92	0.01	0.46	0.42
Backhoe/Front Loader	125	4	1	0.36	1.45	2.27	0.00	0.21	0.19
Water Truck	350	8	1	0.93	4.72	7.94	0.01	0.43	0.40
30-Ton Crane Truck	500	6	1	1.50	4.52	13.91	0.02	0.52	0.48
Concrete Mixer Truck	350	2	1	0.33	0.86	3.23	0.00	0.11	0.11
Lowboy Truck/Trailer	450	4	1	0.47	2.36	3.97	0.00	0.22	0.20
Flat Bed Truck/Trailer	400	4	1	0.66	1.72	6.46	0.01	0.23	0.21
Pipe Truck/Trailer	275	6	1	0.98	2.58	9.69	0.01	0.34	0.32
Compressor Trailer	60	4	1	0.41	1.17	1.11	0.00	0.11	0.10
80-Ton Rough Terrain Crane	350	6	1	0.75	2.08	7.42	0.01	0.28	0.26
Total Equipment Exhaust				**9.23**	**28.99**	**84.35**	**0.10**	**3.46**	**3.18**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]	
Crew Truck	0.35	6	0.01	0.04	0.04	0.00	0.00	0.00	
Worker Commuting	40	6	0.22	1.98	0.22	0.00	0.02	0.01	
Water Truck	20	2	0.12	0.48	1.53	0.00	0.07	0.06	
Concrete Truck	20	1	0.06	0.24	0.76	0.00	0.04	0.03	
Total Vehicle Exhaust			**0.22**	**2.02**	**0.26**	**0.00**	**0.02**	**0.01**	

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 23

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Crew Truck	Paved	0.35	6	0.00	0.00
Crew Truck	Unpaved	0	6	0.00	0.00
Worker Commuting	Paved	40	6	0.12	0.00
Worker Commuting	Unpaved	0	6	0.00	0.00
Water Truck	Paved	20	2	0.02	0.00
Water Truck	Unpaved	0	2	0.00	0.00
Concrete Truck	Paved	20	1	0.01	0.00
Concrete Truck	Unpaved	0	1	0.00	0.00
Total Vehicle Fugitive				**0.12**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 24

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 25

Table 11
Subtransmission UG Cable Installation

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	6.65	20.84	63.59	0.07	2.49	2.29
Vehicle Exhaust	0.30	2.70	0.35	0.00	0.03	0.02
Vehicle Fugitive	--	--	--	--	0.17	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**6.95**	**23.54**	**63.94**	**0.08**	**2.69**	**2.31**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
1-Ton Crew Cab Flat Bed, 4x4	300	4	2	1.31	3.44	12.92	0.01	0.46	0.42
Wire Truck/Trailer	350	6	2	1.97	5.16	19.38	0.02	0.69	0.63
Bucket Truck	250	6	1	0.98	2.58	9.69	0.01	0.34	0.32
Boom Truck	350	6	1	0.98	2.58	9.69	0.01	0.34	0.32
Puller	350	6	1	0.70	3.54	5.96	0.01	0.33	0.30
Static Truck/Tensioner	350	6	1	0.70	3.54	5.96	0.01	0.33	0.30
Total Equipment Exhaust				**6.65**	**20.84**	**63.59**	**0.07**	**2.49**	**2.29**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

#REF!

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]	
Crew Truck	0.35	8	0.01	0.05	0.06	0.00	0.00	0.00	
Worker Commuting	40	8	0.29	2.64	0.29	0.00	0.03	0.02	
Total Vehicle Exhaust			**0.30**	**2.70**	**0.35**	**0.00**	**0.03**	**0.02**	

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 23

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Crew Truck	Paved	0.35	8	0.00	0.00
Crew Truck	Unpaved	0	8	0.00	0.00
Worker Commuting	Paved	40	8	0.16	0.00
Worker Commuting	Unpaved	0	8	0.00	0.00
Total Vehicle Fugitive				**0.17**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 24

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 25

Table 11a
Subtransmission UG Cable Installation

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	5.01	16.54	47.44	0.06	1.92	1.76
Vehicle Exhaust	0.30	2.70	0.35	0.00	0.03	0.02
Vehicle Fugitive	--	--	--	--	0.17	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**5.31**	**19.24**	**47.79**	**0.06**	**2.11**	**1.78**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
1-Ton Crew Cab Flat Bed, 4x4	300	4	1	0.66	1.72	6.46	0.01	0.23	0.21
Wire Truck/Trailer	350	6	1	0.98	2.58	9.69	0.01	0.34	0.32
Bucket Truck	250	6	1	0.98	2.58	9.69	0.01	0.34	0.32
Boom Truck	350	6	1	0.98	2.58	9.69	0.01	0.34	0.32
Puller	350	6	1	0.70	3.54	5.96	0.01	0.33	0.30
Static Truck/Tensioner	350	6	1	0.70	3.54	5.96	0.01	0.33	0.30
Total Equipment Exhaust				**5.01**	**16.54**	**47.44**	**0.06**	**1.92**	**1.76**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

#REF!

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]	
Crew Truck	0.35	8	0.01	0.05	0.06	0.00	0.00	0.00	
Worker Commuting	40	8	0.29	2.64	0.29	0.00	0.03	0.02	
Total Vehicle Exhaust			**0.30**	**2.70**	**0.35**	**0.00**	**0.03**	**0.02**	

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 23

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Crew Truck	Paved	0.35	8	0.00	0.00
Crew Truck	Unpaved	0	8	0.00	0.00
Worker Commuting	Paved	40	8	0.16	0.00
Worker Commuting	Unpaved	0	8	0.00	0.00
Total Vehicle Fugitive				**0.17**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 24

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 25

Table 12
Subtransmission Line Conductor Installation

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	16.10	42.25	161.78	0.18	5.69	5.23
Vehicle Exhaust	0.60	5.39	0.70	0.01	0.06	0.04
Vehicle Fugitive	--	--	--	--	0.33	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**16.70**	**47.64**	**162.48**	**0.19**	**6.08**	**5.27**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
3/4-Ton Pick-up	300	8	2	2.62	6.88	25.84	0.03	0.92	0.85
1-Ton Crew Cab Flat Bed, 4x4	300	8	4	5.25	13.76	51.68	0.06	1.84	1.69
Wire Truck/Trailer	350	2	2	0.66	1.72	6.46	0.01	0.23	0.21
Dump Truck	350	2	1	0.33	0.86	3.23	0.00	0.11	0.11
Bucket Truck	350	8	2	2.62	6.88	25.84	0.03	0.92	0.85
22-Ton Manitex	350	8	2	2.24	5.88	24.03	0.02	0.81	0.75
Splicing Rig	350	2	1	0.28	0.74	3.00	0.00	0.10	0.09
Splicing Lab	300	2	1	0.28	0.74	3.00	0.00	0.10	0.09
3 Drum Straw line Puller	300	6	1	0.84	2.21	9.01	0.01	0.31	0.28
Static Truck/Tensioner	350	6	1	0.98	2.58	9.69	0.01	0.34	0.32
Total Equipment Exhaust				**16.10**	**42.25**	**161.78**	**0.18**	**5.69**	**5.23**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 22

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Crew Truck	0.35	16	0.01	0.10	0.12	0.00	0.00	0.00
Worker Commuting	40	16	0.58	5.29	0.59	0.01	0.06	0.04
Total Vehicle Exhaust			**0.60**	**5.39**	**0.70**	**0.01**	**0.06**	**0.04**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 23

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Crew Truck	Paved	0.35	16	0.00	0.00
Crew Truck	Unpaved	0	16	0.00	0.00
Worker Commuting	Paved	40	16	0.33	0.00
Worker Commuting	Unpaved	0	16	0.00	0.00
Total Vehicle Fugitive				**0.33**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 24

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 25

Table 15
Telecommunication Wood Pole Removal

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	6.32	16.66	59.25	0.07	2.17	2.00
Vehicle Exhaust	0.22	2.02	0.26	0.00	0.02	0.01
Vehicle Fugitive	--	--	--	--	0.12	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**6.54**	**18.68**	**59.52**	**0.07**	**2.32**	**2.01**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
1-Ton Crew Cab Flat Bed, 4x4	300	8	2	2.62	6.88	25.84	0.03	0.92	0.85
Bucket Truck	250	6	1	0.98	2.58	9.69	0.01	0.34	0.32
Compressor Trailer	60	4	1	0.41	1.17	1.11	0.00	0.11	0.10
Boom Truck	350	6	1	0.98	2.58	9.69	0.01	0.34	0.32
Flat Bed Truck/Trailer	400	8	1	1.31	3.44	12.92	0.01	0.46	0.42
Total Equipment Exhaust				**6.32**	**16.66**	**59.25**	**0.07**	**2.17**	**2.00**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

#REF!

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]	
Crew Truck	0.35	6	0.01	0.04	0.04	0.00	0.00	0.00	
Worker Commuting	40	6	0.22	1.98	0.22	0.00	0.02	0.01	
Total Vehicle Exhaust			**0.22**	**2.02**	**0.26**	**0.00**	**0.02**	**0.01**	

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 23

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Crew Truck	Paved	0.35	6	0.00	0.00
Crew Truck	Unpaved	0	6	0.00	0.00
Worker Commuting	Paved	40	6	0.12	0.00
Worker Commuting	Unpaved	0	6	0.00	0.00
Total Vehicle Fugitive				**0.12**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 24

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 25

Table 16
Telecommunication LWC Pole Haul

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	3.61	9.46	35.53	0.04	1.26	1.16
Vehicle Exhaust	0.15	1.35	0.18	0.00	0.01	0.01
Vehicle Fugitive	--	--	--	--	0.08	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**3.76**	**10.81**	**35.70**	**0.04**	**1.36**	**1.17**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
3/4-Ton Pick-up Truck, 4x4	275	8	1	1.31	3.44	12.92	0.01	0.46	0.42
Boom Truck	350	6	1	0.98	2.58	9.69	0.01	0.34	0.32
Flat Bed Truck/Trailer	400	8	1	1.31	3.44	12.92	0.01	0.46	0.42
Total Equipment Exhaust				**3.61**	**9.46**	**35.53**	**0.04**	**1.26**	**1.16**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

#REF!

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]	
Crew Truck	0.35	4	0.00	0.03	0.03	0.00	0.00	0.00	
Worker Commuting	40	4	0.15	1.32	0.15	0.00	0.01	0.01	
Total Vehicle Exhaust			**0.15**	**1.35**	**0.18**	**0.00**	**0.01**	**0.01**	

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 23

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Crew Truck	Paved	0.35	4	0.00	0.00
Crew Truck	Unpaved	0	4	0.00	0.00
Worker Commuting	Paved	40	4	0.08	0.00
Worker Commuting	Unpaved	0	4	0.00	0.00
Total Vehicle Fugitive				**0.08**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 24

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 25

Table 17
Telecommunication Pole Assembly

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	3.24	8.64	27.51	0.03	1.08	0.99
Vehicle Exhaust	0.30	2.70	0.35	0.00	0.03	0.02
Vehicle Fugitive	--	--	--	--	0.17	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**3.54**	**11.34**	**27.86**	**0.04**	**1.27**	**1.01**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
3/4-Ton Pick-up Truck, 4x4	275	4	2	1.31	3.44	12.92	0.01	0.46	0.42
1-Ton Crew Cab Flat Bed, 4x4	300	4	2	1.31	3.44	12.92	0.01	0.46	0.42
Compressor Trailer	60	6	1	0.62	1.76	1.67	0.00	0.16	0.15
Boom Truck	350	8	1	1.31	3.44	12.92	0.01	0.46	0.42
Total Equipment Exhaust				**3.24**	**8.64**	**27.51**	**0.03**	**1.08**	**0.99**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

#REF!

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]	
Crew Truck	0.35	8	0.01	0.05	0.06	0.00	0.00	0.00	
Worker Commuting	40	8	0.29	2.64	0.29	0.00	0.03	0.02	
Total Vehicle Exhaust			**0.30**	**2.70**	**0.35**	**0.00**	**0.03**	**0.02**	

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 23

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Crew Truck	Paved	0.35	8	0.00	0.00
Crew Truck	Unpaved	0	8	0.00	0.00
Worker Commuting	Paved	40	8	0.16	0.00
Worker Commuting	Unpaved	0	8	0.00	0.00
Total Vehicle Fugitive				**0.17**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 24

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 25

Table 18
Telecommunication Install LWS Pole

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	5.05	16.08	44.51	0.05	2.02	1.86
Vehicle Exhaust	0.22	2.02	0.26	0.00	0.02	0.01
Vehicle Fugitive	--	--	--	--	0.12	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**5.27**	**18.10**	**44.77**	**0.05**	**2.17**	**1.88**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
1-Ton Crew Cab Flat Bed, 4x4	300	8	1	1.31	3.44	12.92	0.01	0.46	0.42
Bucket Truck	250	6	1	0.98	2.58	9.69	0.01	0.34	0.32
Boom Truck	350	6	1	0.98	2.58	9.69	0.01	0.34	0.32
Auger Truck	210	6	1	1.04	4.58	7.68	0.01	0.46	0.43
Backhoe/Front loader	125	8	1	0.73	2.90	4.53	0.00	0.41	0.38
Flat Bed Truck/Trailer	400	8	1	1.31	3.44	12.92	0.01	0.46	0.42
Total Equipment Exhaust				**5.05**	**16.08**	**44.51**	**0.05**	**2.02**	**1.86**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

#REF!

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]	
Crew Truck	0.35	6	0.01	0.04	0.04	0.00	0.00	0.00	
Worker Commuting	40	6	0.22	1.98	0.22	0.00	0.02	0.01	
Total Vehicle Exhaust			**0.22**	**2.02**	**0.26**	**0.00**	**0.02**	**0.01**	

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 23

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Crew Truck	Paved	0.35	6	0.00	0.00
Crew Truck	Unpaved	0	6	0.00	0.00
Worker Commuting	Paved	40	6	0.12	0.00
Worker Commuting	Unpaved	0	6	0.00	0.00
Total Vehicle Fugitive				**0.12**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 24

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 25

Table 13
Telecommunications Line Aboveground Work

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	2.62	6.88	25.84	0.03	0.92	0.85
Vehicle Exhaust	0.15	1.32	0.15	0.00	0.01	0.01
Vehicle Fugitive	--	--	--	--	0.08	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**2.77**	**8.20**	**25.99**	**0.03**	**1.02**	**0.85**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Reel Truck	300	8	1	1.31	3.44	12.92	0.01	0.46	0.42
Bucket Truck	350	8	1	1.31	3.44	12.92	0.01	0.46	0.42
Total Equipment Exhaust				**2.62**	**6.88**	**25.84**	**0.03**	**0.92**	**0.85**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

#REF!

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]	
Worker Commuting	40	4	0.15	1.32	0.15	0.00	0.01	0.01	
Total Vehicle Exhaust			**0.15**	**1.32**	**0.15**	**0.00**	**0.01**	**0.01**	

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 23

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	Paved	40	4	0.08	0.00
Worker Commuting	Unpaved	0	4	0.00	0.00
Total Vehicle Fugitive				**0.08**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 24

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 25

Table 14
Telecommunications Line Belowground Work

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	2.62	6.88	25.84	0.03	0.92	0.85
Vehicle Exhaust	0.15	1.32	0.15	0.00	0.01	0.01
Vehicle Fugitive	--	--	--	--	0.08	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**2.77**	**8.20**	**25.99**	**0.03**	**1.02**	**0.85**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Reel Truck	300	8	1	1.31	3.44	12.92	0.01	0.46	0.42
Bucket Truck	350	8	1	1.31	3.44	12.92	0.01	0.46	0.42
Total Equipment Exhaust				**2.62**	**6.88**	**25.84**	**0.03**	**0.92**	**0.85**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

#REF!

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]	
Worker Commuting	40	4	0.15	1.32	0.15	0.00	0.01	0.01	
Total Vehicle Exhaust			**0.15**	**1.32**	**0.15**	**0.00**	**0.01**	**0.01**	

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 23

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	Paved	40	4	0.08	0.00
Worker Commuting	Unpaved	0	4	0.00	0.00
Total Vehicle Fugitive				**0.08**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 24

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 25

Table 19
Access and Spur Road Road and Landing Work

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	12.02	43.41	115.48	0.12	4.42	4.06
Vehicle Exhaust	0.11	0.99	0.11	0.00	0.01	0.01
Vehicle Fugitive	--	--	--	--	0.06	0.00
Earthwork Fugitive	--	--	--	--	7.88	0.49
Total	**12.13**	**44.40**	**115.59**	**0.12**	**12.37**	**4.56**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
1-Ton Crew Cab, 4x4	500	2	2	0.66	1.72	6.46	0.01	0.23	0.21
Road Grader	500	4	1	0.86	3.01	8.48	0.01	0.32	0.30
Water Truck	350	8	2	3.99	12.07	37.10	0.04	1.39	1.28
Backhoe/Front Loader	500	6	1	2.08	9.81	20.41	0.02	0.82	0.76
Drum Type Compactor		4	1	0.90	2.49	10.19	0.01	0.34	0.31
Track Type Dozer	350	6	1	2.17	10.45	19.24	0.02	0.82	0.76
Excavator	500	6	1	0.87	2.36	8.96	0.01	0.31	0.29
Lowboy Truck/Trailer	500	2	1	0.50	1.51	4.64	0.01	0.17	0.16
Total Equipment Exhaust				**12.02**	**43.41**	**115.48**	**0.12**	**4.42**	**4.06**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 22

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	40	3	0.11	0.99	0.11	0.00	0.01	0.01
Total Vehicle Exhaust			**0.11**	**0.99**	**0.11**	**0.00**	**0.01**	**0.01**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 23

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	Paved	40	3	0.06	0.00
Worker Commuting	Unpaved	0	3	0.00	0.00
Total Vehicle Fugitive				**0.06**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 24

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Bulldozing	Hours/Day	6	0.94	0.13
Excavating and Grading[b]	VMT/Day	10	6.94	0.36
Total Earthwork Fugitive			**7.88**	**0.49**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

[b.] Assumes 1 mile of grader and excavator travel per hour.

Emission factors are in Table 25

Table 20
Access and Spur Road Retaining Wall Installation

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	21.41	64.07	215.01	0.27	7.91	7.27
Vehicle Exhaust	0.44	3.97	0.44	0.01	0.04	0.03
Vehicle Fugitive	--	--	--	--	0.25	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**21.85**	**68.04**	**215.45**	**0.27**	**8.20**	**7.30**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
1-Ton Crew Cab, 4x4	300	8	2	2.62	6.88	25.84	0.03	0.92	0.85
Boom Truck	350	8	2	2.62	6.88	25.84	0.03	0.92	0.85
Drill Rig	250	8	2	1.53	5.54	18.95	0.03	0.61	0.57
Backhoe/Front Loader	350	6	1	0.85	2.42	9.30	0.01	0.31	0.29
Wheel Loader	250	8	2	2.27	6.46	24.79	0.03	0.84	0.77
Dump Truck	350	8	4	5.25	13.76	51.68	0.06	1.84	1.69
Water Truck	350	10	2	2.34	11.80	19.85	0.02	1.09	1.00
Concrete Mixer Truck	350	4	6	3.93	10.32	38.76	0.04	1.38	1.27
Total Equipment Exhaust				**21.41**	**64.07**	**215.01**	**0.27**	**7.91**	**7.27**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

#REF!

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]	
Worker Commuting	40	12	0.44	3.97	0.44	0.01	0.04	0.03	
Water Truck	20	1	0.06	0.24	0.76	0.00	0.04	0.03	
Concrete Truck	20	1	0.06	0.24	0.76	0.00	0.04	0.03	
Total Vehicle Exhaust			**0.44**	**3.97**	**0.44**	**0.01**	**0.04**	**0.03**	

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 23

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	Paved	40	12	0.25	0.00
Worker Commuting	Unpaved	0	12	0.00	0.00
Water Truck	Paved	20	1	0.01	0.00
Water Truck	Unpaved	0	1	0.00	0.00
Concrete Truck	Paved	20	1	0.01	0.00
Concrete Truck	Unpaved	0	1	0.00	0.00
Total Vehicle Fugitive				**0.25**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 24

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Bulldozing	Hours/Day		0.00	0.00
Excavating and Grading[b]	VMT/Day		0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

[b.] Assumes 1 mile of grader and excavator travel per hour.

Emission factors are in Table 25

Table 20a
Spur Retaining Wall

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	8.51	26.36	86.31	0.11	3.19	2.94
Vehicle Exhaust	0.44	3.97	0.44	0.01	0.04	0.03
Vehicle Fugitive	--	--	--	--	0.25	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**8.95**	**30.33**	**86.75**	**0.11**	**3.48**	**2.96**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
1-Ton Crew Cab, 4x4	300	8	1	1.31	3.44	12.92	0.01	0.46	0.42
Boom Truck	350	8	1	1.31	3.44	12.92	0.01	0.46	0.42
Drill Rig	250	8	1	0.77	2.77	9.48	0.02	0.31	0.28
Backhoe/Front Loader	350	6	1	0.85	2.42	9.30	0.01	0.31	0.29
Wheel Loader	250	8	1	1.13	3.23	12.39	0.02	0.42	0.39
Dump Truck	350	8	1	1.31	3.44	12.92	0.01	0.46	0.42
Water Truck	350	10	1	1.17	5.90	9.93	0.01	0.54	0.50
Concrete Mixer Truck	350	4	1	0.66	1.72	6.46	0.01	0.23	0.21
Total Equipment Exhaust				**8.51**	**26.36**	**86.31**	**0.11**	**3.19**	**2.94**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

#REF!

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]	
Worker Commuting	40	12	0.44	3.97	0.44	0.01	0.04	0.03	
Water Truck	20	1	0.06	0.24	0.76	0.00	0.04	0.03	
Concrete Truck	20	1	0.06	0.24	0.76	0.00	0.04	0.03	
Total Vehicle Exhaust			**0.44**	**3.97**	**0.44**	**0.01**	**0.04**	**0.03**	

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 23

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	Paved	40	12	0.25	0.00
Worker Commuting	Unpaved	0	12	0.00	0.00
Water Truck	Paved	20	1	0.01	0.00
Water Truck	Unpaved	0	1	0.00	0.00
Concrete Truck	Paved	20	1	0.01	0.00
Concrete Truck	Unpaved	0	1	0.00	0.00
Total Vehicle Fugitive				**0.25**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 24

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Bulldozing	Hours/Day		0.00	0.00
Excavating and Grading[b]	VMT/Day		0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

[b.] Assumes 1 mile of grader and excavator travel per hour.

Emission factors are in Table 25

Table 21
Offroad Emission Factors
SCAB Fleet Average Emission Factors (Diesel)

OffRoad 2010

Air Basin	SC

Equipment	MaxHP	ROG (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SOX (lb/hr)	PM (lb/hr)	PM2.5 (lb/hr)	CO2 (lb/hr)	CH4 (lb/hr)
Aerial Lifts	15	0.0104	0.0529	0.0662	0.0001	0.0037	0.0034	8.7	0.0009
	25	0.0210	0.0577	0.1013	0.0001	0.0065	0.0060	11.0	0.0019
	50	0.0756	0.1937	0.1984	0.0003	0.0189	0.0174	19.6	0.0068
	120	0.0702	0.2501	0.4502	0.0004	0.0361	0.0332	38.1	0.0063
	500	0.1506	0.5801	1.9198	0.0021	0.0598	0.0550	213	0.0136
	750	0.2803	1.0486	3.5605	0.0039	0.1096	0.1008	385	0.0253
Aerial Lifts Composite		0.0670	0.2093	0.3600	0.0004	0.0248	0.0228	34.7	0.0060
Air Compressors	15	0.0144	0.0513	0.0838	0.0001	0.0061	0.0056	7.2	0.0013
	25	0.0325	0.0847	0.1397	0.0002	0.0098	0.0091	14.4	0.0029
	50	0.1163	0.2813	0.2386	0.0003	0.0265	0.0243	22.3	0.0105
	120	0.1014	0.3351	0.5977	0.0006	0.0545	0.0501	47.0	0.0091
	175	0.1274	0.5113	1.0082	0.0010	0.0568	0.0523	88.5	0.0115
	250	0.1225	0.3413	1.3983	0.0015	0.0462	0.0425	131	0.0111
	500	0.1943	0.6778	2.2062	0.0023	0.0752	0.0692	232	0.0175
	750	0.3054	1.0476	3.5002	0.0036	0.1179	0.1085	358	0.0276
	1000	0.5203	1.8591	6.0195	0.0049	0.1809	0.1664	486	0.0469
Air Compressors Composite		0.1120	0.3613	0.7320	0.0007	0.0526	0.0484	63.6	0.0101
Bore/Drill Rigs	15	0.0120	0.0632	0.0754	0.0002	0.0031	0.0028	10.3	0.0011
	25	0.0196	0.0660	0.1257	0.0002	0.0065	0.0059	16.0	0.0018
	50	0.0545	0.2505	0.2820	0.0004	0.0194	0.0178	31.0	0.0049
	120	0.0722	0.4812	0.6155	0.0009	0.0456	0.0419	77.1	0.0065
	175	0.0930	0.7543	0.9148	0.0016	0.0481	0.0443	141	0.0084
	250	0.0957	0.3460	1.1847	0.0021	0.0384	0.0353	188	0.0086
	500	0.1488	0.5566	1.7054	0.0031	0.0614	0.0565	311	0.0134
	750	0.2996	1.0997	3.4821	0.0062	0.1231	0.1132	615	0.0270
	1000	0.5360	1.7074	8.3092	0.0093	0.2078	0.1912	928	0.0484
Bore/Drill Rigs Composite		0.1052	0.5146	1.1331	0.0017	0.0498	0.0458	165	0.0095
Cement and Mortar Mixers	15	0.0079	0.0388	0.0505	0.0001	0.0029	0.0027	6.3	0.0007
	25	0.0346	0.0942	0.1633	0.0002	0.0107	0.0099	17.6	0.0031
Cement and Mortar Mixers Composite		0.0101	0.0434	0.0599	0.0001	0.0035	0.0033	7.2	0.0009
Concrete/Industrial Saws	25	0.0200	0.0678	0.1279	0.0002	0.0063	0.0058	16.5	0.0018
	50	0.1231	0.3210	0.3070	0.0004	0.0301	0.0277	30.2	0.0111
	120	0.1342	0.4976	0.8601	0.0009	0.0719	0.0662	74.1	0.0121
	175	0.1927	0.8786	1.6459	0.0018	0.0864	0.0794	160	0.0174
Concrete/Industrial Saws Composite		0.1270	0.4273	0.6566	0.0007	0.0552	0.0508	58.5	0.0115
Cranes	50	0.1284	0.3166	0.2547	0.0003	0.0289	0.0266	23.2	0.0116
	120	0.1117	0.3723	0.6542	0.0006	0.0602	0.0554	50.1	0.0101
	175	0.1211	0.4880	0.9302	0.0009	0.0538	0.0495	80.3	0.0109
	250	0.1243	0.3464	1.2372	0.0013	0.0470	0.0432	112	0.0112
	500	0.1821	0.6625	1.7722	0.0018	0.0685	0.0630	180	0.0164
	750	0.3082	1.1113	3.0564	0.0030	0.1166	0.1072	303	0.0278
	9999	1.0894	4.1317	12.1879	0.0098	0.3792	0.3489	971	0.0983
Cranes Composite		0.1594	0.5431	1.4515	0.0014	0.0642	0.0591	129	0.0144
Crawler Tractors	50	0.1446	0.3520	0.2780	0.0003	0.0320	0.0295	24.9	0.0131
	120	0.1551	0.5018	0.9038	0.0008	0.0819	0.0753	65.8	0.0140
	175	0.1941	0.7597	1.4788	0.0014	0.0856	0.0787	121	0.0175
	250	0.2051	0.5743	1.9440	0.0019	0.0784	0.0722	166	0.0185
	500	0.2913	1.1931	2.7255	0.0025	0.1101	0.1013	259	0.0263
	750	0.5240	2.1290	4.9881	0.0047	0.1989	0.1829	465	0.0473
	1000	0.7980	3.3726	8.5998	0.0066	0.2810	0.2585	658	0.0720
Crawler Tractors Composite		0.1861	0.6409	1.3854	0.0013	0.0854	0.0786	114	0.0168
Crushing/Proc. Equipment	50	0.2271	0.5592	0.4700	0.0006	0.0520	0.0478	44.0	0.0205
	120	0.1760	0.5956	1.0382	0.0010	0.0960	0.0883	83.1	0.0159
	175	0.2367	0.9736	1.8607	0.0019	0.1068	0.0982	167	0.0214
	250	0.2243	0.6225	2.5465	0.0028	0.0841	0.0773	245	0.0202
	500	0.3091	1.0542	3.4510	0.0037	0.1187	0.1092	374	0.0279

Table 21
Offroad Emission Factors
SCAB Fleet Average Emission Factors (Diesel)

OffRoad 2010

Air Basin	SC

Equipment	MaxHP	(lb/hr) ROG	(lb/hr) CO	(lb/hr) NOX	(lb/hr) SOX	(lb/hr) PM	(lb/hr) PM2.5	(lb/hr) CO2	(lb/hr) CH4
	750	0.4956	1.6226	5.6506	0.0059	0.1900	0.1748	589	0.0447
	9999	1.3820	4.8014	16.0752	0.0131	0.4812	0.4427	1,308	0.1247
Crushing/Proc. Equipment Composite		0.2152	0.7260	1.4394	0.0015	0.0935	0.0861	132	0.0194
Dumpers/Tenders	25							7.6	0.0010
Dumpers/Tenders Composite		0.0108	0.0336	0.0645	0.0001	0.0036	0.0034	7.6	0.0010
Excavators	25	0.0199	0.0677	0.1261	0.0002	0.0057	0.0052	16.4	0.0018
	50	0.1131	0.3145	0.2638	0.0003	0.0276	0.0254	25.0	0.0102
	120	0.1398	0.5318	0.8402	0.0009	0.0781	0.0718	73.6	0.0126
	175	0.1465	0.6701	1.1143	0.0013	0.0663	0.0610	112	0.0132
	250	0.1451	0.3934	1.4935	0.0018	0.0519	0.0478	159	0.0131
	500	0.1984	0.6161	1.9285	0.0023	0.0711	0.0654	234	0.0179
	750	0.3313	1.0196	3.3023	0.0039	0.1198	0.1102	387	0.0299
Excavators Composite		0.1483	0.5581	1.1502	0.0013	0.0638	0.0587	120	0.0134
Forklifts	50	0.0666	0.1824	0.1530	0.0002	0.0163	0.0150	14.7	0.0060
	120	0.0601	0.2243	0.3497	0.0004	0.0342	0.0315	31.2	0.0054
	175	0.0738	0.3306	0.5540	0.0006	0.0337	0.0310	56.1	0.0067
	250	0.0652	0.1707	0.7163	0.0009	0.0227	0.0209	77.1	0.0059
	500	0.0868	0.2343	0.8909	0.0011	0.0307	0.0282	111	0.0078
Forklifts Composite		0.0686	0.2319	0.5161	0.0006	0.0281	0.0258	54.4	0.0062
Generator Sets	15	0.0172	0.0726	0.1154	0.0002	0.0069	0.0063	10.2	0.0016
	25	0.0300	0.1033	0.1705	0.0002	0.0107	0.0098	17.6	0.0027
	50	0.1117	0.2904	0.3070	0.0004	0.0284	0.0261	30.6	0.0101
	120	0.1395	0.5054	0.9075	0.0009	0.0714	0.0657	77.9	0.0126
	175	0.1672	0.7471	1.4780	0.0016	0.0721	0.0663	142	0.0151
	250	0.1618	0.5018	2.0720	0.0024	0.0618	0.0569	213	0.0146
	500	0.2305	0.8858	2.9974	0.0033	0.0917	0.0844	337	0.0208
	750	0.3838	1.4300	4.9646	0.0055	0.1502	0.1381	544	0.0346
	9999	1.0080	3.6008	12.1384	0.0105	0.3600	0.3312	1,049	0.0909
Generator Sets Composite		0.0961	0.3293	0.6440	0.0007	0.0396	0.0365	61.0	0.0087
Graders	50	0.1400	0.3584	0.2961	0.0004	0.0323	0.0297	27.5	0.0126
	120	0.1553	0.5459	0.9268	0.0009	0.0849	0.0781	75.0	0.0140
	175	0.1743	0.7409	1.3532	0.0014	0.0783	0.0720	124	0.0157
	250	0.1761	0.4934	1.7904	0.0019	0.0662	0.0609	172	0.0159
	500	0.2149	0.7523	2.1198	0.0023	0.0807	0.0742	229	0.0194
	750	0.4580	1.5877	4.6098	0.0049	0.1729	0.1591	486	0.0413
Graders Composite		0.1723	0.6314	1.4338	0.0015	0.0753	0.0693	133	0.0155
Off-Highway Tractors	120	0.2457	0.7439	1.4200	0.0011	0.1255	0.1155	93.7	0.0222
	175	0.2326	0.8561	1.7665	0.0015	0.1014	0.0933	130	0.0210
	250	0.1881	0.5347	1.7050	0.0015	0.0735	0.0677	130	0.0170
	750	0.7400	3.5496	6.8440	0.0057	0.2854	0.2625	568	0.0668
	1000	1.1197	5.5155	11.4633	0.0082	0.4009	0.3688	814	0.1010
Off-Highway Tractors Composite		0.2368	0.8385	1.9897	0.0017	0.0974	0.0896	151	0.0214
Off-Highway Trucks	175	0.1732	0.7625	1.2796	0.0014	0.0771	0.0710	125	0.0156
	250	0.1639	0.4301	1.6150	0.0019	0.0574	0.0528	167	0.0148
	500	0.2492	0.7542	2.3188	0.0027	0.0872	0.0802	272	0.0225
	750	0.4069	1.2210	3.8814	0.0044	0.1436	0.1321	442	0.0367
	1000	0.6440	2.0615	7.3260	0.0063	0.2219	0.2041	625	0.0581
Off-Highway Trucks Composite		0.2480	0.7429	2.3885	0.0027	0.0875	0.0805	260	0.0224
Other Construction Equipme	15	0.0118	0.0617	0.0737	0.0002	0.0030	0.0028	10.1	0.0011
	25	0.0162	0.0545	0.1039	0.0002	0.0053	0.0049	13.2	0.0015
	50	0.1033	0.2930	0.2787	0.0004	0.0263	0.0242	28.0	0.0093
	120	0.1320	0.5419	0.8649	0.0009	0.0740	0.0681	80.9	0.0119
	175	0.1168	0.5901	0.9927	0.0012	0.0543	0.0499	107	0.0105
	500	0.1705	0.6068	1.9821	0.0025	0.0678	0.0624	254	0.0154
Other Construction Equipment Composite		0.1056	0.4108	1.0117	0.0013	0.0442	0.0406	123	0.0095
Other General Industrial Equ	15	0.0066	0.0391	0.0466	0.0001	0.0017	0.0016	6.4	0.0006

Table 21
Offroad Emission Factors
SCAB Fleet Average Emission Factors (Diesel)

OffRoad 2010

Air Basin	SC

Equipment	MaxHP	ROG (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SOX (lb/hr)	PM (lb/hr)	PM2.5 (lb/hr)	CO2 (lb/hr)	CH4 (lb/hr)
	25	0.0186	0.0632	0.1177	0.0002	0.0054	0.0049	15.3	0.0017
	50	0.1281	0.3073	0.2413	0.0003	0.0285	0.0263	21.7	0.0116
	120	0.1459	0.4647	0.8218	0.0007	0.0795	0.0731	62.0	0.0132
	175	0.1516	0.5816	1.1364	0.0011	0.0676	0.0622	95.9	0.0137
	250	0.1400	0.3676	1.5016	0.0015	0.0509	0.0469	136	0.0126
	500	0.2500	0.8031	2.6018	0.0026	0.0919	0.0845	265	0.0226
	750	0.4153	1.3236	4.4083	0.0044	0.1538	0.1415	437	0.0375
	1000	0.6374	2.2063	7.1530	0.0056	0.2212	0.2035	560	0.0575
Other General Industrial Equipmen Compos		0.1847	0.5948	1.6649	0.0016	0.0740	0.0681	152	0.0167
Other Material Handling Equi	50	0.1773	0.4246	0.3355	0.0004	0.0395	0.0363	30.3	0.0160
	120	0.1417	0.4524	0.8014	0.0007	0.0772	0.0710	60.7	0.0128
	175	0.1914	0.7367	1.4429	0.0014	0.0856	0.0787	122	0.0173
	250	0.1481	0.3917	1.6024	0.0016	0.0542	0.0499	145	0.0134
	500	0.1782	0.5784	1.8750	0.0019	0.0660	0.0607	192	0.0161
	9999	0.8390	2.9174	9.4509	0.0073	0.2912	0.2679	741	0.0757
Other Material Handling Equipment Compo		0.1773	0.5556	1.6150	0.0015	0.0715	0.0658	141	0.0160
Pavers	25	0.0278	0.0845	0.1603	0.0002	0.0092	0.0085	18.7	0.0025
	50	0.1624	0.3860	0.3110	0.0004	0.0356	0.0328	28.0	0.0147
	120	0.1638	0.5223	0.9693	0.0008	0.0853	0.0785	69.2	0.0148
	175	0.2049	0.7959	1.6028	0.0014	0.0903	0.0831	128	0.0185
	250	0.2426	0.7011	2.3337	0.0022	0.0953	0.0877	194	0.0219
	500	0.2622	1.1661	2.5319	0.0023	0.1023	0.0941	233	0.0237
Pavers Composite		0.1774	0.5644	0.9868	0.0009	0.0709	0.0652	77.9	0.0160
Paving Equipment	25	0.0155	0.0521	0.0993	0.0002	0.0051	0.0047	12.6	0.0014
	50	0.1384	0.3277	0.2654	0.0003	0.0303	0.0279	23.9	0.0125
	120	0.1282	0.4084	0.7600	0.0006	0.0668	0.0615	54.5	0.0116
	175	0.1599	0.6208	1.2577	0.0011	0.0704	0.0648	101	0.0144
	250	0.1506	0.4363	1.4619	0.0014	0.0592	0.0545	122	0.0136
Paving Equipment Composite		0.1336	0.4478	0.8963	0.0008	0.0629	0.0579	68.9	0.0121
Plate Compactors	15	0.0050	0.0263	0.0317	0.0001	0.0015	0.0014	4.3	0.0005
Plate Compactors Composite		0.0050	0.0263	0.0317	0.0001	0.0015	0.0014	4.3	0.0005
Pressure Washers	15	0.0083	0.0348	0.0553	0.0001	0.0033	0.0030	4.9	0.0007
	25	0.0122	0.0419	0.0691	0.0001	0.0043	0.0040	7.1	0.0011
	50	0.0413	0.1143	0.1388	0.0002	0.0115	0.0106	14.3	0.0037
	120	0.0388	0.1487	0.2674	0.0003	0.0193	0.0177	24.1	0.0035
Pressure Washers Composite		0.0199	0.0666	0.0989	0.0001	0.0070	0.0065	9.4	0.0018
Pumps	15	0.0148	0.0528	0.0862	0.0001	0.0062	0.0057	7.4	0.0013
	25	0.0439	0.1142	0.1884	0.0002	0.0133	0.0122	19.5	0.0040
	50	0.1339	0.3428	0.3479	0.0004	0.0333	0.0306	34.3	0.0121
	120	0.1441	0.5136	0.9216	0.0009	0.0744	0.0685	77.9	0.0130
	175	0.1709	0.7489	1.4815	0.0016	0.0742	0.0683	140	0.0154
	250	0.1593	0.4846	1.9941	0.0023	0.0609	0.0560	201	0.0144
	500	0.2450	0.9411	3.1080	0.0034	0.0973	0.0895	345	0.0221
	750	0.4167	1.5559	5.2721	0.0057	0.1631	0.1500	571	0.0376
	9999	1.3269	4.8008	15.8590	0.0136	0.4723	0.4345	1,355	0.1197
Pumps Composite		0.0936	0.3096	0.5545	0.0006	0.0393	0.0362	49.6	0.0084
Rollers	15	0.0074	0.0386	0.0461	0.0001	0.0019	0.0017	6.3	0.0007
	25	0.0164	0.0551	0.1049	0.0002	0.0054	0.0050	13.3	0.0015
	50	0.1270	0.3169	0.2753	0.0003	0.0292	0.0269	26.0	0.0115
	120	0.1201	0.4177	0.7383	0.0007	0.0641	0.0590	59.0	0.0108
	175	0.1478	0.6270	1.2022	0.0012	0.0659	0.0606	108	0.0133
	250	0.1542	0.4540	1.6232	0.0017	0.0603	0.0555	153	0.0139
	500	0.1987	0.7785	2.0882	0.0022	0.0783	0.0721	219	0.0179
Rollers Composite		0.1176	0.4212	0.7749	0.0008	0.0547	0.0503	67.1	0.0106
Rough Terrain Forklifts	50	0.1590	0.4186	0.3558	0.0004	0.0377	0.0347	33.9	0.0143
	120	0.1213	0.4447	0.7326	0.0007	0.0676	0.0621	62.4	0.0109

Table 21
Offroad Emission Factors
SCAB Fleet Average Emission Factors (Diesel)

OffRoad 2010

Air Basin	SC

Equipment	MaxHP	ROG (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SOX (lb/hr)	PM (lb/hr)	PM2.5 (lb/hr)	CO2 (lb/hr)	CH4 (lb/hr)
	175	0.1640	0.7302	1.2875	0.0014	0.0749	0.0689	125	0.0148
	250	0.1523	0.4270	1.6632	0.0019	0.0567	0.0521	171	0.0137
	500	0.2097	0.6871	2.1987	0.0025	0.0788	0.0725	257	0.0189
Rough Terrain Forklifts Composite		0.1272	0.4766	0.7988	0.0008	0.0678	0.0624	70.3	0.0115
Rubber Tired Dozers	175	0.2398	0.8686	1.7881	0.0015	0.1036	0.0953	129	0.0216
	250	0.2776	0.7758	2.4482	0.0021	0.1071	0.0986	183	0.0250
	500	0.3621	1.7411	3.2071	0.0026	0.1370	0.1260	265	0.0327
	750	0.5457	2.6075	4.9024	0.0040	0.2071	0.1906	399	0.0492
	1000	0.8464	4.1786	8.4813	0.0060	0.3018	0.2776	592	0.0764
Rubber Tired Dozers Composite		0.3379	1.4127	2.9891	0.0025	0.1288	0.1185	239	0.0305
Rubber Tired Loaders	25	0.0206	0.0697	0.1314	0.0002	0.0064	0.0059	16.9	0.0019
	50	0.1560	0.4005	0.3333	0.0004	0.0361	0.0332	31.1	0.0141
	120	0.1206	0.4268	0.7227	0.0007	0.0660	0.0608	58.9	0.0109
	175	0.1476	0.6326	1.1513	0.0012	0.0664	0.0611	106	0.0133
	250	0.1493	0.4210	1.5357	0.0017	0.0563	0.0518	149	0.0135
	500	0.2172	0.7648	2.1684	0.0023	0.0819	0.0754	237	0.0196
	750	0.4484	1.5625	4.5660	0.0049	0.1700	0.1564	486	0.0405
	1000	0.6154	2.2308	7.1368	0.0060	0.2156	0.1983	594	0.0555
Rubber Tired Loaders Composite		0.1440	0.5078	1.1537	0.0012	0.0651	0.0599	109	0.0130
Scrapers	120	0.2236	0.7169	1.3034	0.0011	0.1177	0.1083	93.9	0.0202
	175	0.2391	0.9290	1.8284	0.0017	0.1053	0.0969	148	0.0216
	250	0.2618	0.7368	2.4818	0.0024	0.1006	0.0926	209	0.0236
	500	0.3650	1.5182	3.4250	0.0032	0.1386	0.1275	321	0.0329
	750	0.6328	2.6115	6.0373	0.0056	0.2413	0.2220	555	0.0571
Scrapers Composite		0.3202	1.2424	2.9078	0.0027	0.1256	0.1155	262	0.0289
Signal Boards	15	0.0072	0.0377	0.0450	0.0001	0.0017	0.0016	6.2	0.0006
	50	0.1492	0.3827	0.3689	0.0005	0.0364	0.0335	36.2	0.0135
	120	0.1495	0.5380	0.9446	0.0009	0.0792	0.0728	80.2	0.0135
	175	0.1907	0.8437	1.6203	0.0017	0.0846	0.0778	155	0.0172
	250	0.2049	0.6138	2.5094	0.0029	0.0789	0.0726	255	0.0185
Signal Boards Composite		0.0224	0.0953	0.1615	0.0002	0.0091	0.0084	16.7	0.0020
Skid Steer Loaders	25	0.0249	0.0700	0.1252	0.0002	0.0079	0.0073	13.8	0.0022
	50	0.0785	0.2507	0.2463	0.0003	0.0217	0.0199	25.5	0.0071
	120	0.0607	0.2822	0.4131	0.0005	0.0355	0.0327	42.8	0.0055
Skid Steer Loaders Composite		0.0692	0.2489	0.2919	0.0004	0.0252	0.0232	30.3	0.0062
Surfacing Equipment	50	0.0589	0.1520	0.1451	0.0002	0.0142	0.0131	14.1	0.0053
	120	0.1192	0.4334	0.7683	0.0007	0.0624	0.0574	63.8	0.0108
	175	0.1071	0.4787	0.9169	0.0010	0.0472	0.0435	85.8	0.0097
	250	0.1254	0.3883	1.3783	0.0015	0.0494	0.0455	135	0.0113
	500	0.1854	0.7785	2.0517	0.0022	0.0741	0.0682	221	0.0167
	750	0.2960	1.2171	3.2929	0.0035	0.1173	0.1079	347	0.0267
Surfacing Equipment Composite		0.1550	0.6164	1.5685	0.0017	0.0606	0.0557	166	0.0140
Sweepers/Scrubbers	15	0.0124	0.0729	0.0870	0.0002	0.0033	0.0030	11.9	0.0011
	25	0.0239	0.0808	0.1524	0.0002	0.0075	0.0069	19.6	0.0022
	50	0.1508	0.3893	0.3297	0.0004	0.0355	0.0327	31.6	0.0136
	120	0.1490	0.5329	0.8645	0.0009	0.0843	0.0776	75.0	0.0134
	175	0.1856	0.8049	1.4276	0.0016	0.0854	0.0786	139	0.0167
	250	0.1344	0.3643	1.5598	0.0018	0.0489	0.0450	162	0.0121
Sweepers/Scrubbers Composite		0.1548	0.5380	0.8473	0.0009	0.0686	0.0631	78.5	0.0140
Tractors/Loaders/Backhoes	25	0.0214	0.0681	0.1317	0.0002	0.0072	0.0066	15.9	0.0019
	50	0.1257	0.3548	0.3114	0.0004	0.0312	0.0287	30.3	0.0113
	120	0.0910	0.3623	0.5664	0.0006	0.0515	0.0474	51.7	0.0082
	175	0.1216	0.5881	0.9646	0.0011	0.0562	0.0517	101	0.0110
	250	0.1418	0.4037	1.5493	0.0019	0.0523	0.0482	172	0.0128
	500	0.2630	0.8495	2.7242	0.0039	0.0980	0.0901	345	0.0237
	750	0.3986	1.2725	4.2276	0.0058	0.1496	0.1376	517	0.0360

Table 21
Offroad Emission Factors

SCAB Fleet Average Emission Factors (Diesel)

OffRoad 2010

Air Basin	SC

Equipment	MaxHP	(lb/hr) ROG	(lb/hr) CO	(lb/hr) NOX	(lb/hr) SOX	(lb/hr) PM	(lb/hr) PM2.5	(lb/hr) CO2	(lb/hr) CH4
Tractors/Loaders/Backhoes Composite		0.1021	0.3930	0.6747	0.0008	0.0521	0.0479	66.8	0.0092
Trenchers	15	0.0099	0.0517	0.0617	0.0001	0.0023	0.0021	8.5	0.0009
	25	0.0400	0.1355	0.2555	0.0004	0.0125	0.0115	32.9	0.0036
	50	0.1837	0.4365	0.3620	0.0004	0.0405	0.0373	32.9	0.0166
	120	0.1509	0.4840	0.9082	0.0008	0.0776	0.0714	64.9	0.0136
	175	0.2254	0.8843	1.7973	0.0016	0.0990	0.0911	144	0.0203
	250	0.2770	0.8161	2.6802	0.0025	0.1103	0.1015	223	0.0250
	500	0.3468	1.6352	3.4013	0.0031	0.1373	0.1264	311	0.0313
	750	0.6586	3.0677	6.5218	0.0059	0.2602	0.2394	587	0.0594
Trenchers Composite		0.1675	0.4907	0.7598	0.0007	0.0637	0.0586	58.7	0.0151
Welders	15	0.0124	0.0441	0.0720	0.0001	0.0052	0.0048	6.2	0.0011
	25	0.0254	0.0661	0.1091	0.0001	0.0077	0.0071	11.3	0.0023
	50	0.1231	0.3025	0.2724	0.0003	0.0287	0.0264	26.0	0.0111
	120	0.0807	0.2738	0.4899	0.0005	0.0428	0.0394	39.5	0.0073
	175	0.1333	0.5515	1.0896	0.0011	0.0590	0.0542	98.2	0.0120
	250	0.1052	0.3022	1.2367	0.0013	0.0400	0.0368	119	0.0095
	500	0.1327	0.4823	1.5648	0.0016	0.0520	0.0479	168	0.0120
Welders Composite		0.0805	0.2246	0.2920	0.0003	0.0270	0.0248	25.6	0.0073

Table 22
Off-road Exhaust Emission Factors - Year 2010

Equipment Type	Fuel	Horse-power	SCAQMD Off-Road Model Category		ROG (lb/hr)[a]	CO (lb/hr)[a]	NO_X (lb/hr)[a]	SO_X (lb/hr)[a]	PM_{10} (lb/hr)[a]	$PM_{2.5}$ (lb/hr)[b]	CO_2 (lb/hr)[a]	CH_4 (lb/hr)[a]
10,000 lb Rough Terrain Fork Lif	Diesel	250	Forklifts	10,000 lb Rough Terrain Fork Lift 0250	0.069	0.232	0.516	0.001	0.028	0.026	54.396	0.006
10,000 lb/ Rough Terrain Forklift	Diesel	200	Forklifts	10,000 lb/ Rough Terrain Forklift 0200	0.069	0.232	0.516	0.001	0.028	0.026	54.396	0.006
10-cu yd. Dump Truck	Diesel	350	Off-Highway Trucks	10-cu yd. Dump Truck 0350	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015
10-cu. yd. Concrete Mixer Truck	Diesel	425	Off-Highway Trucks	10-cu. yd. Concrete Mixer Truck 0425	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015
10-cu. yd. Dump Truck	Diesel	350	Off-Highway Trucks	10-cu. yd. Dump Truck 0350	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015
10-Ton Hydraulic Crane	Diesel		Cranes	10-Ton Hydraulic Crane 0000	0.127	0.427	0.657	0.001	0.055	0.051	58.464	0.011
15 Ton Crane	Diesel	125	Cranes	15 Ton Crane 0125	0.112	0.372	0.654	0.001	0.060	0.055	50.148	0.010
15 Ton Crane	Diesel		Cranes	15 Ton Crane 0000	0.127	0.427	0.657	0.001	0.055	0.051	58.464	0.011
17 Ton Crane	Diesel	125	Cranes	17 Ton Crane 0125	0.112	0.372	0.654	0.001	0.060	0.055	50.148	0.010
17 Ton Crane	Diesel		Cranes	17 Ton Crane 0000	0.127	0.427	0.657	0.001	0.055	0.051	58.464	0.011
1-Ton Crew Cab Flat Bed, 4x4	Diesel	500	Off-Highway Trucks	1-Ton Crew Cab Flat Bed, 4x4 0500	0.249	0.754	2.319	0.003	0.087	0.080	272.334	0.022
1-Ton Crew Cab Flat Bed, 4x4	Diesel	300	Off-Highway Trucks	1-Ton Crew Cab Flat Bed, 4x4 0300	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015
1-Ton Crew Cab, 4x4	Diesel	250	Off-Highway Trucks	1-Ton Crew Cab, 4x4 0250	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015
1-Ton Crew Cab, 4x4	Diesel	500	Off-Highway Trucks	1-Ton Crew Cab, 4x4 0500	0.249	0.754	2.319	0.003	0.087	0.080	272.334	0.022
1-Ton Crew Cab, 4x4	Diesel	300	Off-Highway Trucks	1-Ton Crew Cab, 4x4 0300	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015
200 Ton Crawler Crane	Diesel		Cranes	200 Ton Crawler Crane 0000	0.127	0.427	0.657	0.001	0.055	0.051	58.464	0.011
22-Ton Manitex	Diesel	350	Other Construction Equipment	22-Ton Manitex 0350	0.117	0.590	0.993	0.001	0.054	0.050	106.516	0.011
3 Drum Straw line Puller	Diesel	300	Other Construction Equipment	3 Drum Straw line Puller 0300	0.117	0.590	0.993	0.001	0.054	0.050	106.516	0.011
3/4-Ton Pickup	Diesel		Off-Highway Trucks	3/4-Ton Pickup 0000	0.237	0.839	1.990	0.002	0.097	0.090	151.449	0.021
3/4-Ton Pick-up	Diesel	300	Off-Highway Trucks	3/4-Ton Pick-up 0300	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015
3/4-Ton Pick-up Truck, 4x4	Diesel	275	Off-Highway Trucks	3/4-Ton Pick-up Truck, 4x4 0275	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015
3/4-Ton Pick-up Truck, 4x4	Diesel	300	Off-Highway Trucks	3/4-Ton Pick-up Truck, 4x4 0300	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015
30 Ton Crane	Diesel	125	Cranes	30 Ton Crane 0125	0.112	0.372	0.654	0.001	0.060	0.055	50.148	0.010
30 Ton Crane	Diesel		Cranes	30 Ton Crane 0000	0.127	0.427	0.657	0.001	0.055	0.051	58.464	0.011
30 Ton Hydraulic Crane	Diesel		Cranes	30 Ton Hydraulic Crane 0000	0.127	0.427	0.657	0.001	0.055	0.051	58.464	0.011
30-Ton Crane	Diesel	300	Cranes	30-Ton Crane 0300	0.124	0.346	1.237	0.001	0.047	0.043	112.159	0.011
30-Ton Crane Truck	Diesel	250	Off-Highway Trucks	30-Ton Crane Truck 0250	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015
30-Ton Crane Truck	Diesel	500	Off-Highway Trucks	30-Ton Crane Truck 0500	0.249	0.754	2.319	0.003	0.087	0.080	272.334	0.022
30-Ton Crane Truck	Diesel	300	Cranes	30-Ton Crane Truck 0300	0.124	0.346	1.237	0.001	0.047	0.043	112.159	0.011
31 Ton Crane	Diesel	300	Cranes	31 Ton Crane 0300	0.124	0.346	1.237	0.001	0.047	0.043	112.159	0.011
40' Flat Bed Truck/Trailer	Diesel	350	Off-Highway Trucks	40' Flat Bed Truck/Trailer 0350	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015
4000 Gallon Water Truck	Diesel	350	Off-Highway Trucks	4000 Gallon Water Truck 0350	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015
50 Ton Hydraulic Crane	Diesel		Cranes	50 Ton Hydraulic Crane 0000	0.127	0.427	0.657	0.001	0.055	0.051	58.464	0.011
80ft. Hydraulic Man-lift Bucket T	Diesel	350	Off-Highway Trucks	80ft. Hydraulic Man-lift Bucket Truck 035	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015
80ft. Hydraulic Man-lift Bucket T	Diesel	500	Cranes	80ft. Hydraulic Man-lift Bucket Truck 050	0.182	0.662	1.772	0.002	0.068	0.063	180.101	0.016
80-Ton Rough Terrain Crane	Diesel	350	Cranes	80-Ton Rough Terrain Crane 0350	0.124	0.346	1.237	0.001	0.047	0.043	112.159	0.011
980 Loader	Diesel		Tractors/Loaders/Backhoes	980 Loader 0000	0.155	0.538	0.847	0.001	0.069	0.063	78.543	0.014
Air Compressors	Diesel		Air Compressors	Air Compressors 0000	0.067	0.209	0.360	0.000	0.025	0.023	34.722	0.006
Asphalt Curb Machine	Diesel	35	Paving Equipment	Asphalt Curb Machine 0035	0.016	0.052	0.099	0.000	0.005	0.005	12.628	0.001
Asphalt Curb Machine	Diesel		Paving Equipment	Asphalt Curb Machine 0000	0.177	0.564	0.987	0.001	0.071	0.065	77.935	0.016
Asphalt Paver	Diesel	152	Pavers	Asphalt Paver 0152	0.164	0.522	0.969	0.001	0.085	0.079	69.196	0.015
Asphalt Paver	Diesel		Pavers	Asphalt Paver 0000	0.177	0.556	1.615	0.002	0.072	0.066	141.194	0.016
Auger Truck	Diesel	210	Off-Highway Trucks	Auger Truck 0210	0.173	0.763	1.280	0.001	0.077	0.071	125.088	0.016
Auger Truck	Diesel	500	Off-Highway Trucks	Auger Truck 0500	0.249	0.754	2.319	0.003	0.087	0.080	272.334	0.022
Backhoe	Diesel	79	Tractors/Loaders/Backhoes	Backhoe 0079	0.126	0.355	0.311	0.000	0.031	0.029	30.347	0.011
Backhoe	Diesel	350	Tractors/Loaders/Backhoes	Backhoe 0350	0.142	0.404	1.549	0.002	0.052	0.048	171.737	0.013
Backhoe	Diesel	200	Tractors/Loaders/Backhoes	Backhoe 0200	0.122	0.588	0.965	0.001	0.056	0.052	101.387	0.011
Backhoe	Diesel		Tractors/Loaders/Backhoes	Backhoe 0000	0.155	0.538	0.847	0.001	0.069	0.063	78.543	0.014
Backhoe/Front Loader	Diesel	350	Tractors/Loaders/Backhoes	Backhoe/Front Loader 0350	0.142	0.404	1.549	0.002	0.052	0.048	171.737	0.013
Backhoe/Front Loader	Diesel	500	Tractors/Loaders/Backhoes	Backhoe/Front Loader 0500	0.263	0.849	2.724	0.004	0.098	0.090	344.853	0.024
Backhoe/Front Loader	Diesel	125	Tractors/Loaders/Backhoes	Backhoe/Front Loader 0125	0.091	0.362	0.566	0.001	0.052	0.047	51.728	0.008
Backhoe/Loader	Diesel		Tractors/Loaders/Backhoes	Backhoe/Loader 0000	0.155	0.538	0.847	0.001	0.069	0.063	78.543	0.014
Backhoe/Loader	Diesel	500	Tractors/Loaders/Backhoes	Backhoe/Loader 0500	0.263	0.849	2.724	0.004	0.098	0.090	344.853	0.024
Batch Plant	Diesel		Other Construction Equipment	Batch Plant 0000	0.248	0.743	2.388	0.003	0.088	0.081	260.104	0.022
Boom Truck	Diesel	350	Off-Highway Trucks	Boom Truck 0350	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015
Boom Truck	Diesel		Off-Highway Trucks	Boom Truck 0000	0.237	0.839	1.990	0.002	0.097	0.090	151.449	0.021
Bucket Truck	Diesel		Off-Highway Trucks	Bucket Truck 0000	0.237	0.839	1.990	0.002	0.097	0.090	151.449	0.021
Bucket Truck	Diesel	250	Off-Highway Trucks	Bucket Truck 0250	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015
Bucket Truck	Diesel	350	Off-Highway Trucks	Bucket Truck 0350	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015
Compressor	Diesel		Other Construction Equipment	Compressor 0000	0.248	0.743	2.388	0.003	0.088	0.081	260.104	0.022
Compressor Trailer	Diesel	120	Other Construction Equipment	Compressor Trailer 0120	0.132	0.542	0.865	0.001	0.074	0.068	80.859	0.012
Compressor Trailer	Diesel	120	Other Construction Equipment	Compressor Trailer 0120	0.132	0.542	0.865	0.001	0.074	0.068	80.859	0.012
Compressor Trailer	Diesel	60	Other Construction Equipment	Compressor Trailer 0060	0.103	0.293	0.279	0.000	0.026	0.024	27.990	0.009
Concrete Mixer Truck	Diesel	350	Off-Highway Trucks	Concrete Mixer Truck 0350	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015
Concrete Truck	Diesel		Off-Highway Trucks	Concrete Truck 0000	0.237	0.839	1.990	0.002	0.097	0.090	151.449	0.021
Conductor Pulling Machine	Diesel	120	Other Construction Equipment	Conductor Pulling Machine 0120	0.132	0.542	0.865	0.001	0.074	0.068	80.859	0.012
Conductor Pulling Machine	Diesel							#N/A	#N/A	#N/A	#N/A	#N/A
Conductor Tensioner	Diesel	120	Other Construction Equipment	Conductor Tensioner 0120	0.132	0.542	0.865	0.001	0.074	0.068	80.859	0.012
Conductor Tensioner	Diesel		Other Construction Equipment	Conductor Tensioner 0000	0.248	0.743	2.388	0.003	0.088	0.081	260.104	0.022
Construction Fork	Diesel		Forklifts	Construction Fork 0000	0.148	0.558	1.150	0.001	0.064	0.059	119.581	0.013
Crane	Diesel	125	Cranes	Crane 0125	0.112	0.372	0.654	0.001	0.060	0.055	50.148	0.010
Crane	Diesel		Cranes	Crane 0000	0.127	0.427	0.657	0.001	0.055	0.051	58.464	0.011
D6 Dozer	Diesel		Crawler Tractors	D6 Dozer 0000	0.159	0.543	1.451	0.001	0.064	0.059	128.655	0.014
Ditch Witch	Diesel		Off-Highway Trucks	Ditch Witch 0000	0.237	0.839	1.990	0.002	0.097	0.090	151.449	0.021
Dozer	Diesel	350	Rubber Tired Dozers	Dozer 0350	0.278	0.776	2.448	0.002	0.107	0.099	183.487	0.025
Dozer	Diesel		Rubber Tired Dozers	Dozer 0000	0.127	0.477	0.799	0.001	0.068	0.062	70.281	0.011
Dozer, D6	Diesel	165	Crawler Tractors	Dozer, D6 0165	0.155	0.502	0.904	0.001	0.082	0.075	65.811	0.014
Dozer, D6	Diesel		Crawler Tractors	Dozer, D6 0000	0.159	0.543	1.451	0.001	0.064	0.059	128.655	0.014
Dozer, D8	Diesel	305	Crawler Tractors	Dozer, D8 0305	0.205	0.574	1.944	0.002	0.078	0.072	166.132	0.019
Dozer, D8	Diesel		Crawler Tractors	Dozer, D8 0000	0.159	0.543	1.451	0.001	0.064	0.059	128.655	0.014
Drill Rig	Diesel	250	Bore/Drill Rigs	Drill Rig 0250	0.096	0.346	1.185	0.002	0.038	0.035	188.102	0.009
Drill Rig	Diesel		Bore/Drill Rigs	Drill Rig 0000	0.112	0.361	0.732	0.001	0.053	0.048	63.607	0.010
Drilling Rig	Diesel	190	Bore/Drill Rigs	Drilling Rig 0190	0.093	0.754	0.915	0.002	0.048	0.044	141.076	0.008
Drilling Rig	Diesel		Bore/Drill Rigs	Drilling Rig 0000	0.112	0.361	0.732	0.001	0.053	0.048	63.607	0.010
Drilling Rig	Diesel		Bore/Drill Rigs	Drilling Rig 0000	0.112	0.361	0.732	0.001	0.053	0.048	63.607	0.010
Drum Type Compactor	Diesel		Plate Compactors	Drum Type Compactor 0000	0.005	0.026	0.032	0.000	0.002	0.001	4.314	0.000
Dump Truck	Diesel		Off-Highway Trucks	Dump Truck 0000	0.237	0.839	1.990	0.002	0.097	0.090	151.449	0.021
Dump Truck	Diesel	350	Off-Highway Trucks	Dump Truck 0350	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015
Excavator	Diesel	152	Excavators	Excavator 0152	0.140	0.532	0.840	0.001	0.078	0.072	73.623	0.013
Excavator	Diesel	250	Excavators	Excavator 0250	0.145	0.393	1.494	0.002	0.052	0.048	158.683	0.013
Excavator	Diesel	500	Excavators	Excavator 0500	0.148	0.558	1.150	0.001	0.064	0.059	119.581	0.013
Excavator	Diesel		Excavators	Excavator 0000	0.011	0.034	0.064	0.000	0.004	0.003	7.624	0.001
Excavators	Diesel		Excavators	Excavators 0000	0.011	0.034	0.064	0.000	0.004	0.003	7.624	0.001
Extendable Flat Bed Pole Truck	Diesel	500	Off-Highway Trucks	Extendable Flat Bed Pole Truck 0500	0.249	0.754	2.319	0.003	0.087	0.080	272.334	0.022
Extendable Flat Bed Pole Truck	Diesel	350	Off-Highway Trucks	Extendable Flat Bed Pole Truck 0350	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015
Flat Bed Truck/Trailer	Diesel	350	Off-Highway Trucks	Flat Bed Truck/Trailer 0350	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015
Flat Bed Truck/Trailer	Diesel	400	Off-Highway Trucks	Flat Bed Truck/Trailer 0400	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015

Table 22
Off-road Exhaust Emission Factors - Year 2010

Equipment Type	Fuel	Horse-power	SCAQMD Off-Road Model Category		ROG (lb/hr)[a]	CO (lb/hr)[a]	NO_X (lb/hr)[a]	SO_X (lb/hr)[a]	PM_{10} (lb/hr)[a]	$PM_{2.5}$ (lb/hr)[b]	CO_2 (lb/hr)[a]	CH_4 (lb/hr)[a]
Forklift	Diesel	83	Forklifts	Forklift 0083	0.067	0.182	0.153	0.000	0.016	0.015	14.672	0.006
Forklift	Diesel		Forklifts	Forklift 0000	0.148	0.558	1.150	0.001	0.064	0.059	119.581	0.013
Forklift	Diesel		Forklifts	Forklift 0000	0.148	0.558	1.150	0.001	0.064	0.059	119.581	0.013
Forklift	Diesel		Forklifts	Forklift 0000	0.148	0.558	1.150	0.001	0.064	0.059	119.581	0.013
Foundation Auger	Diesel	79	Bore/Drill Rigs	Foundation Auger 0079	0.054	0.250	0.282	0.000	0.019	0.018	31.037	0.005
Foundation Auger	Diesel		Bore/Drill Rigs	Foundation Auger 0000	0.112	0.361	0.732	0.001	0.053	0.048	63.607	0.010
Front End Loader	Diesel		Tractors/Loaders/Backhoes	Front End Loader 0000	0.155	0.538	0.847	0.001	0.069	0.063	78.543	0.014
Generators	Diesel		Generator Sets	Generators 0000	0.069	0.232	0.516	0.001	0.028	0.026	54.396	0.006
Grader	Diesel	110	Graders	Grader 0110	0.172	0.631	1.434	0.001	0.075	0.069	132.743	0.016
Grader	Diesel	350	Graders	Grader 0350	0.172	0.631	1.434	0.001	0.075	0.069	132.743	0.016
Grader	Diesel		Graders	Grader 0000	0.172	0.631	1.434	0.001	0.075	0.069	132.743	0.016
Grader	Diesel		Graders	Grader 0000	0.172	0.631	1.434	0.001	0.075	0.069	132.743	0.016
Hauler	Diesel		Off-Highway Trucks	Hauler 0000	0.237	0.839	1.990	0.002	0.097	0.090	151.449	0.021
Loader	Diesel	147	Tractors/Loaders/Backhoes	Loader 0147	0.091	0.362	0.566	0.001	0.052	0.047	51.728	0.008
Loader	Diesel		Tractors/Loaders/Backhoes	Loader 0000	0.155	0.538	0.847	0.001	0.069	0.063	78.543	0.014
Lowboy Truck/Trailer	Diesel	450	Other Construction Equipment	Lowboy Truck/Trailer 0450	0.117	0.590	0.993	0.001	0.054	0.050	106.516	0.011
Lowboy Truck/Trailer	Diesel	500	Other Construction Equipment	Lowboy Truck/Trailer 0500	0.171	0.607	1.982	0.002	0.068	0.062	254.238	0.015
Manlift	Diesel	43	Aerial Lifts	Manlift 0043	0.021	0.058	0.101	0.000	0.007	0.006	10.960	0.002
Manlift	Diesel	500	Aerial Lifts	Manlift 0500	0.151	0.580	1.920	0.002	0.060	0.055	212.856	0.014
Off-Highway Truck	Diesel		Off-Highway Trucks	Off-Highway Truck 0000	0.237	0.839	1.990	0.002	0.097	0.090	151.449	0.021
Off-Highway Truck	Diesel	500	Off-Highway Trucks	Off-Highway Truck 0500	0.249	0.754	2.319	0.003	0.087	0.080	272.334	0.022
Off-Highway Trucks	Diesel		Other Construction Equipment	Off-Highway Trucks 0000	0.248	0.743	2.388	0.003	0.088	0.081	260.104	0.022
Other Construction Equipment	Diesel		Other Construction Equipment	Other Construction Equipment 0000	0.248	0.743	2.388	0.003	0.088	0.081	260.104	0.022
Paver/Sealer	Diesel		Pavers	Paver/Sealer 0000	0.177	0.556	1.615	0.002	0.072	0.066	141.194	0.016
Paving Roller	Diesel	46	Rollers	Paving Roller 0046	0.016	0.055	0.105	0.000	0.005	0.005	13.343	0.001
Paving Roller	Diesel		Rollers	Paving Roller 0000	0.094	0.310	0.554	0.001	0.039	0.036	49.607	0.008
Pipe Truck/Trailer	Diesel	275	Off-Highway Trucks	Pipe Truck/Trailer 0275	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015
Puller	Diesel	350	Other Construction Equipment	Puller 0350	0.117	0.590	0.993	0.001	0.054	0.050	106.516	0.011
Reach Manlift	Diesel	87	Aerial Lifts	Reach Manlift 0087	0.076	0.194	0.198	0.000	0.019	0.017	19.613	0.007
Reach Manlift	Diesel	500	Aerial Lifts	Reach Manlift 0500	0.151	0.580	1.920	0.002	0.060	0.055	212.856	0.014
Reel Truck	Diesel	300	Off-Highway Trucks	Reel Truck 0300	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015
Road Grader	Diesel	500	Graders	Road Grader 0500	0.172	0.631	1.434	0.001	0.075	0.069	132.743	0.016
Scissor Lift	Diesel	87	Aerial Lifts	Scissor Lift 0087	0.076	0.194	0.198	0.000	0.019	0.017	19.613	0.007
Scissor Lift	Diesel	500	Aerial Lifts	Scissor Lift 0500	0.151	0.580	1.920	0.002	0.060	0.055	212.856	0.014
Scraper	Diesel	267	Scrapers	Scraper 0267	0.262	0.737	2.482	0.002	0.101	0.093	209.470	0.024
Scraper	Diesel		Scrapers	Scraper 0000	0.144	0.508	1.154	0.001	0.065	0.060	108.613	0.013
Sheep's Foot Vibrator Compactor (10 yards)	Diesel		Plate Compactors	ep's Foot Vibrator Compactor (10 yards)	0.005	0.026	0.032	0.000	0.002	0.001	4.314	0.000
Skid Steer Loader	Diesel	75	Skid Steer Loaders	Skid Steer Loader 0075	0.078	0.251	0.246	0.000	0.022	0.020	25.519	0.007
Skid Steer Loader	Diesel		Skid Steer Loaders	Skid Steer Loader 0000	0.022	0.095	0.161	0.000	0.009	0.008	16.698	0.002
Skip Loader	Diesel	75	Skid Steer Loaders	Skip Loader 0075	0.078	0.251	0.246	0.000	0.022	0.020	25.519	0.007
Skip Loader	Diesel		Skid Steer Loaders	Skip Loader 0000	0.022	0.095	0.161	0.000	0.009	0.008	16.698	0.002
Splicing Lab	Diesel	300	Other Construction Equipment	Splicing Lab 0300	0.117	0.590	0.993	0.001	0.054	0.050	106.516	0.011
Splicing Rig	Diesel	350	Bore/Drill Rigs	Splicing Rig 0350	0.096	0.346	1.185	0.002	0.038	0.035	188.102	0.009
Static Truck/Tensioner	Diesel	350	Other Construction Equipment	Static Truck/Tensioner 0350	0.117	0.590	0.993	0.001	0.054	0.050	106.516	0.011
Tamper	Diesel	174	Rollers	Tamper 0174	0.120	0.418	0.738	0.001	0.064	0.059	58.989	0.011
Tamper	Diesel		Rollers	Tamper 0000	0.094	0.310	0.554	0.001	0.039	0.036	49.607	0.008
Track Type Dozer	Diesel	350	Rubber Tired Dozers	Track Type Dozer 0350	0.278	0.776	2.448	0.002	0.107	0.099	183.487	0.025
Tractor	Diesel	45	Tractors/Loaders/Backhoes	Tractor 0045	0.021	0.068	0.132	0.000	0.007	0.007	15.863	0.002
Tractor	Diesel		Tractors/Loaders/Backhoes	Tractor 0000	0.155	0.538	0.847	0.001	0.069	0.063	78.543	0.014
Truck Mounted Crane	Diesel	235	Cranes	Truck Mounted Crane 0235	0.121	0.488	0.930	0.001	0.054	0.050	80.345	0.011
Truck Mounted Crane	Diesel		Cranes	Truck Mounted Crane 0000	0.127	0.427	0.657	0.001	0.055	0.051	58.464	0.011
Truck with Trailer	Diesel		Off-Highway Trucks	Truck with Trailer 0000	0.237	0.839	1.990	0.002	0.097	0.090	151.449	0.021
Truck, Semi, Tractor	Diesel	500	Off-Highway Trucks	Truck, Semi, Tractor 0500	0.249	0.754	2.319	0.003	0.087	0.080	272.334	0.022
Vibrating Roller	Diesel		Rollers	Vibrating Roller 0000	0.094	0.310	0.554	0.001	0.039	0.036	49.607	0.008
Water Truck	Diesel	350	Other Construction Equipment	Water Truck 0350	0.117	0.590	0.993	0.001	0.054	0.050	106.516	0.011
Water Truck	Diesel		Off-Highway Trucks	Water Truck 0000	0.237	0.839	1.990	0.002	0.097	0.090	151.449	0.021
Welders	Diesel		Welders	Welders 0000	0.167	0.491	0.760	0.001	0.064	0.059	58.719	0.015
Wheel Loader	Diesel	250	Tractors/Loaders/Backhoes	Wheel Loader 0250	0.142	0.404	1.549	0.002	0.052	0.048	171.737	0.013
Wire Truck/Trailer	Diesel	350	Off-Highway Trucks	Wire Truck/Trailer 0350	0.164	0.430	1.615	0.002	0.057	0.053	166.545	0.015

[a] SCAQMD CEQA Air Quality Guidance Handbook - Offroad Model Mobile Source Emission Factors; where bhp not available, SCAQMD composite emission factors were used

[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction of PM10 in Diesel Engine | **0.920**

From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Table 23

Onroad Emission Factor Summary

Vechile Type	SCAQMD EF Classification	ROG	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$	CO_2	CH_4
		2010							
Water Truck	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Dump Truck	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Carry-all Truck	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Stake Truck	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Low Bed Truck	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Flatbed Truck	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Line Truck	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Concrete Truck	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Heavy Duty Truck	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
6 Ton Truck	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Dump Truck (10 yards)	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Dump Truck (20 yards)	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Water Truck (2000 gallons)	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Worker Shuttle	MHDT	0.00259	0.01844	0.02062	0.00003	0.00075	0.00064	2.73222	0.00013
Pickup Truck	MHDT	0.00259	0.01844	0.02062	0.00003	0.00075	0.00064	2.73222	0.00013
Crew Truck	MHDT	0.00259	0.01844	0.02062	0.00003	0.00075	0.00064	2.73222	0.00013
Maintenance Truck	MHDT	0.00259	0.01844	0.02062	0.00003	0.00075	0.00064	2.73222	0.00013
Tool Truck	MHDT	0.00259	0.01844	0.02062	0.00003	0.00075	0.00064	2.73222	0.00013
Light Truck	MHDT	0.00259	0.01844	0.02062	0.00003	0.00075	0.00064	2.73222	0.00013
Bucket Truck	MHDT	0.00259	0.01844	0.02062	0.00003	0.00075	0.00064	2.73222	0.00013
Framing Truck	MHDT	0.00259	0.01844	0.02062	0.00003	0.00075	0.00064	2.73222	0.00013
3/4-Ton Pickup	MHDT	0.00259	0.01844	0.02062	0.00003	0.00075	0.00064	2.73222	0.00013
Worker Commuting	Passenger	0.00091	0.00826	0.00092	0.00001	0.00009	0.00005	1.09568	0.00008

[a] SCAQMD CEQA Air Quality Guidance Handbook - Onroad - EMFAC 2007 Emission Factors

PM10 and PM2.5 includes exhaust + tire and brake wear emissions

Table 24
Motor Vehicle Entrained Road Dust Emission Factors

Vehicle Type	Surface		Silt Loading (sL, g/m2) or Silt Content (s, %)[a]	Average Weight (W) (tons)[b]	PM10 Emission Factor (lb/VMT)[c]	PM2.5 Emission Factor (lb/VMT)[c]
Water Truck	Paved	Water TruckPaved	0.035	2.7	5.15E-04	0.00E+00
Water Truck	Unpaved	Water TruckUnpaved	7.5	17	2.14E+00	2.14E-01
Tool Truck	Paved	Tool TruckPaved	0.035	2.7	5.15E-04	0.00E+00
Tool Truck	Unpaved	Tool TruckUnpaved	7.5	17	2.14E+00	2.14E-01
Pickup Truck	Paved	Pickup TruckPaved	0.035	2.7	5.15E-04	0.00E+00
Pickup Truck	Unpaved	Pickup TruckUnpaved	7.5	17	2.14E+00	2.14E-01
Dump Truck	Paved	Dump TruckPaved	0.035	2.7	5.15E-04	0.00E+00
Dump Truck	Unpaved	Dump TruckUnpaved	7.5	17	2.14E+00	2.14E-01
Dump Truck (10 yards)	Paved	ump Truck (10 yards)Pave	0.035	2.7	5.15E-04	0.00E+00
Dump Truck (10 yards)	Unpaved	mp Truck (10 yards)Unpav	7.5	17	2.14E+00	2.14E-01
Dump Truck (20 yards)	Paved	ump Truck (20 yards)Pave	0.035	2.7	5.15E-04	0.00E+00
Dump Truck (20 yards)	Unpaved	mp Truck (20 yards)Unpav	7.5	17	2.14E+00	2.14E-01
6 Ton Truck	Paved	6 Ton TruckPaved	0.035	2.7	5.15E-04	0.00E+00
6 Ton Truck	Unpaved	6 Ton TruckUnpaved	7.5	17	2.14E+00	2.14E-01
Carry-all Truck	Paved	Carry-all TruckPaved	0.035	2.7	5.15E-04	0.00E+00
Carry-all Truck	Unpaved	Carry-all TruckUnpaved	7.5	17	2.14E+00	2.14E-01
Stake Truck	Paved	Stake TruckPaved	0.035	2.7	5.15E-04	0.00E+00
Stake Truck	Unpaved	Stake TruckUnpaved	7.5	17	2.14E+00	2.14E-01
Crew Truck	Paved	Crew TruckPaved	0.035	2.7	5.15E-04	0.00E+00
Crew Truck	Unpaved	Crew TruckUnpaved	7.5	17	2.14E+00	2.14E-01
Low Bed Truck	Paved	Low Bed TruckPaved	0.035	2.7	5.15E-04	0.00E+00
Low Bed Truck	Unpaved	Low Bed TruckUnpaved	7.5	17	2.14E+00	2.14E-01
Maintenance Truck	Paved	Maintenance TruckPaved	0.035	2.7	5.15E-04	0.00E+00
Maintenance Truck	Unpaved	Maintenance TruckUnpave	7.5	17	2.14E+00	2.14E-01
Tractor	Paved	TractorPaved	0.035	2.7	5.15E-04	0.00E+00
Tractor	Unpaved	TractorUnpaved	7.5	17	2.14E+00	2.14E-01
Flatbed Truck	Paved	Flatbed TruckPaved	0.035	2.7	5.15E-04	0.00E+00
Flatbed Truck	Unpaved	Flatbed TruckUnpaved	7.5	17	2.14E+00	2.14E-01
Light Truck	Paved	Light TruckPaved	0.035	2.7	5.15E-04	0.00E+00
Light Truck	Unpaved	Light TruckUnpaved	7.5	17	2.14E+00	2.14E-01
Line Truck	Paved	Line TruckPaved	0.035	2.7	5.15E-04	0.00E+00
Line Truck	Unpaved	Line TruckUnpaved	7.5	17	2.14E+00	2.14E-01
Bucket Truck	Paved	Bucket TruckPaved	0.035	2.7	5.15E-04	0.00E+00
Bucket Truck	Unpaved	Bucket TruckUnpaved	7.5	17	2.14E+00	2.14E-01
Concrete Truck	Paved	Concrete TruckPaved	0.035	2.7	5.15E-04	0.00E+00
Concrete Truck	Unpaved	Concrete TruckUnpaved	7.5	17	2.14E+00	2.14E-01
Heavy Duty Truck	Paved	Heavy Duty TruckPaved	0.035	2.7	5.15E-04	0.00E+00
Heavy Duty Truck	Unpaved	Heavy Duty TruckUnpaved	7.5	17	2.14E+00	2.14E-01
Worker Commuting	Paved	Worker CommutingPaved	0.035	2.7	5.15E-04	0.00E+00
Worker Commuting	Unpaved	Worker CommutingUnpave	7.5	2.7	9.37E-01	9.37E-02
Worker Shuttle	Paved	Worker ShuttlePaved	0.035	2.7	5.15E-04	0.00E+00
Worker Shuttle	Unpaved	Worker ShuttleUnpaved	7.5	2.7	9.37E-01	9.37E-02
Framing Truck	Paved	Framing TruckPaved	0.035	2.7	5.15E-04	0.00E+00
Framing Truck	Unpaved	Framing TruckUnpaved	7.5	2.7	9.37E-01	9.37E-02

[a] Paved road silt loading from ARB Emission Inventory Methodology 7.9, Entrained Paved Road Dust (1997) for collector roads, http://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9.pdf

Unpaved road silt content from SCAQMD CEQA Handbook, (1993) Table A9-9-E-1 for overburden

[b] Average paved on-road vehicle weight in Ventura County from ARB Emission Inventory Methodology 7.9, Entrained Paved Road Dust (1997)

Table 24
Motor Vehicle Entrained Road Dust Emission Factors

Vehicle Type	Surface		Silt Loading (sL, g/m2) or Silt Content (s, %)[a]	Average Weight (W) (tons)[b]	PM10 Emission Factor (lb/VMT)[c]	PM2.5 Emission Factor (lb/VMT)[c]

Unpaved worker commuting weight on access road assumed to be same as paved road weight

Unpaved weight for other trucks is based on upper limit of 33,000 lbs (16.5 tons) for heavy-duty trucks (SCAQMD CEQA Handbook, (1993) Table A9-9

[c] Equations:

$EF(paved) = k_p (sL/2)^{0.65} (W/3)^{1.5} - C$ Ref: AP-42, Section 13.2.1, "Paved Rods," November 2006

$EF (unpaved) = k_u (s/12)^a (W/3)^b$ Ref: AP-42, Section 13.2.2, "Unpaved Rods," November 2006

Constants:

k_p =	0.016	(Particle size multiplier for PM10)
	0.0024	(Particle size multiplier for PM2.5)
C =	0.00047	(Exhaust, brake wear and tire wear adjustment, PM10)
	0.00036	(Exhaust, brake wear and tire wear adjustment, PM2.5)
k_u =	1.5	(Particle size multiplier for PM)
	0.15	(Particle size multiplier for PM2.5)
a =	0.9	for PM10
	0.9	for PM2.5
b =	0.45	for PM10
	0.45	for PM2.5

Table 25
Fugitive Dust Emission Factors

Soil Dropping During Excavation

Emission Factor [lb/cu. yd] = 0.0011 x (mean wind speed [mi/hr] / 5)$^{1.3}$ / (moisture [%] / 2)$^{1.4}$ x (number drops per ton) x (density [ton/cu. yd])
Reference: AP-42, Equation (1), Section 13.2.4, November 2006

Parameter	Value	Basis
Mean Wind Speed	12	SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-G, default
Moisture	15	SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-G-1, moist soil
Number Drops	4	Assumption
Soil Density	1.215	Table 2.46, Handbook of Solid Waste Management

PM10 Emission Factor (Uncontrolled)	9.94E-04	lb/cu. yd
Reduction from Watering Twice/Day[b]	0%	
Controlled PM10 Emission Factor	9.94E-04	lb/cu. yd
Controlled PM2.5 Emission Factor[a]	2.07E-04	lb/cu. yd

[a] PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction of PM10 in Construction Dust = 0.208 from Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006

[b] Watering is assumed to be used to maintain moist conditions, so no further reduction from watering is included.

Emissions [pounds per day] = Controlled emission factor [pounds per cubic yard] x Volume soil handled [cubic yards per day]

Storage Pile Wind Erosion

Emission Factor [lb/day-acre] = 0.85 x (silt content [%] / 1.5) x (365 / 235) x (percentage of time unobstructed wind exceeds 12 mph / 15)
Reference: SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-E

Parameter	Value	Basis
Silt Content	7.5	SCAQMD CEQA Handbook, (1993) Table A9-9-E-1 for overburden
Pct. time wind > 12 mph	100	Worst-case assumption

PM10 Emission Factor (Uncontrolled)	44.0	lb/day-acre
Reduction from Watering Twice/Day	50%	
Controlled PM10 Emission Factor	22.0	lb/day-acre
Controlled PM2.5 Emission Factor[a]	4.6	lb/day-acre

[a] PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction of PM10 in Construction Dust = 0.208 from Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006

Emissions [pounds per day] = Controlled emission factor [pounds per acre-day] x Storage pile surface area [acres]

Bulldozing

Emission Factor [lb/hr] = [1.0 x (silt content [%])$^{1.5}$ / (moisture)$^{1.4}$]*Scaling Factor
Reference: AP-42, Table 11.9-1, July 1998

Parameter	Value	Basis
Silt Content	7.5	SCAQMD CEQA Handbook, (1993) Table A9-9-E-1 for overburden
Moisture	15	SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-G-1, moist soil
PM_{10} Scaling Factor	0.75	EPA AP-42 Chapter 11, Table 11.9-1, Bulldozing, Overburden
$PM_{2.5}$ Scaling Factor	0.105	EPA AP-42 Chapter 11, Table 11.9-1, Bulldozing, Overburden

PM10 Emission Factor (Uncontrolled)	0.348	lb/hr
PM2.5 Emission Factor (Uncontrolled)	0.049	
Reduction from Watering Twice/Day[a]	55%	
Controlled PM10 Emission Factor[b]	0.156	lb/hr
Controlled PM2.5 Emission Factor[b]	0.022	lb/hr

Emissions [pounds per day] = Controlled emission factor [pounds per hour] x Bulldozing or grading time [hours/day]

Notes:
a. Watering is assumed to be applied at various intervals to disturbed areas within the construction sites, at a minimum of 2-1 hour intervals.
b. Control efficiency of site watering during construction obtained from 2006 WRAP Fugitive Dust Handbook. (WRAP 2006)

Grading and Scraping[d]
Emission Factor [lb/VMT] = [0.051 (S)^2.0*Scaling Factor
Reference: AP-42, Table 11.9-1, July 1998

Table 25
Fugitive Dust Emission Factors

Parameter	Value	Basis
Mean Vehicle Speed (S)[a] - Miles Per Hour (MPH)	7.1	EPA AP-42 Chapter 11, Table 11.9-3, Grading
PM_{10} Scaling Factor	0.6	EPA AP-42 Chapter 11, Table 11.9-1, Grading
$PM_{2.5}$ Scaling Factor	0.031	EPA AP-42 Chapter 11, Table 11.9-1, Grading

PM10 Emission Factor (Uncontrolled)	1.54	lb/VMT
PM2.5 Emission Factor (Uncontrolled)	0.08	lb/VMT
Reduction from Watering Twice/Day[b]	55%	
Controlled PM10 Emission Factor[c]	0.69	lb/VMT
Controlled PM2.5 Emission Factor[c]	0.04	lb/VMT

Notes:

a. Speed limit assumed for all graded areas.

b. Watering is assumed to be applied at various intervals to disturbed areas within the construction sites, at a minimum of 2-1 hour intervals.

c. Control efficiency of site watering during construction obtained from 2006 WRAP Fugitive Dust Handbook. (WRAP 2006)

d. Emissions from excavating and scraper unloading are accounted for under "Soil Dropping" emissions per activity.

Table 26

Peak Daily 66kV Substransmission Construction Emissions						
Scenario[1]	**ROG (lb/day)**	**CO (lb/day)**	**NO_x (lb/day)**	**SO_x (lb/day)**	**PM_{10} (lb/day)**	**$PM_{2.5}$ (lb/day)**
1	7.36	25.95	65.40	0.08	2.89	2.54
2	7.66	29.35	68.36	0.08	3.09	2.52
3	5.33	17.77	46.74	0.06	2.12	1.79
4	9.45	31.01	84.61	0.10	3.60	3.20
5	9.45	31.01	84.61	0.10	3.60	3.20
6	9.45	31.01	84.61	0.10	3.60	3.20
7	5.31	19.24	47.79	0.06	2.11	1.78
8	8.95	30.33	86.75	0.11	3.48	2.96
Peak Daily	**9.45**	**31.01**	**86.75**	**0.11**	**3.60**	**3.20**

[1] Emissions were calculated for nine scenarios based on estimated schedule and activity that could occur concurrently, as listed below.

Scenario 1 Daily Emissions

Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Subtransmission Line Remove Existing Towers and Foundations	7.36	25.95	65.40	0.08	2.89	2.54
Total	**7.36**	**25.95**	**65.40**	**0.08**	**2.89**	**2.54**

Scenario 2 Daily Emissions

Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Subtransmission Line TSP Footing Installation	7.66	29.35	68.36	0.08	3.09	2.52
Total	**7.66**	**29.35**	**68.36**	**0.08**	**3.09**	**2.52**

Scenario 3 Daily Emissions

Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Subtransmission Line TSP Haul, Assembly, and Erection	5.33	17.77	46.74	0.06	2.12	1.79
Total	**5.33**	**17.77**	**46.74**	**0.06**	**2.12**	**1.79**

Scenario 4 Daily Emissions

Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Subtransmission Vault, Duct Bank, and Conduit Installation	9.45	31.01	84.61	0.10	3.60	3.20
Total	**9.45**	**31.01**	**84.61**	**0.10**	**3.60**	**3.20**

Scenario 5 Daily Emissions

Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Subtransmission Vault, Duct Bank, and Conduit Installation	9.45	31.01	84.61	0.10	3.60	3.20
Total	**9.45**	**31.01**	**84.61**	**0.10**	**3.60**	**3.20**

Scenario 6 Daily Emissions

Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Subtransmission Vault, Duct Bank, and Conduit Installation	9.45	31.01	84.61	0.10	3.60	3.20
Total	**9.45**	**31.01**	**84.61**	**0.10**	**3.60**	**3.20**

Scenario 7 Daily Emissions

Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Subtransmission UG Cable Installation	5.31	19.24	47.79	0.06	2.11	1.78
Total	**5.31**	**19.24**	**47.79**	**0.06**	**2.11**	**1.78**

Scenario 8 Daily Emissions

Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Spur Retaining Wall	8.95	30.33	86.75	0.11	3.48	2.96
Total	**8.95**	**30.33**	**86.75**	**0.11**	**3.48**	**2.96**

Table 27

Peak Daily Telecommunication Construction Emissions						
Scenario[1]	**ROG (lb/day)**	**CO (lb/day)**	**NO_x (lb/day)**	**SO_x (lb/day)**	**PM_{10} (lb/day)**	**$PM_{2.5}$ (lb/day)**
1	2.77	8.20	25.99	0.03	1.02	0.85
2	2.77	8.20	25.99	0.03	1.02	0.85
3	6.54	18.68	59.52	0.07	2.32	2.01
4	3.76	10.81	35.70	0.04	1.36	1.17
5	3.54	11.34	27.86	0.04	1.27	1.01
6	5.27	18.10	44.77	0.05	2.17	1.88
Peak Daily	**6.54**	**18.68**	**59.52**	**0.07**	**2.32**	**2.01**

[1] Emissions were calculated for six scenarios based on estimated schedule and activity that could occur concurrently, as listed below.

Scenario 1 Daily Emissions

Activity	**ROG (lb/day)**	**CO (lb/day)**	**NO_x (lb/day)**	**SO_x (lb/day)**	**PM_{10} (lb/day)**	**$PM_{2.5}$ (lb/day)**
Telecommunications Line Aboveground Work	2.77	8.20	25.99	0.03	1.02	0.85
Total	**2.77**	**8.20**	**25.99**	**0.03**	**1.02**	**0.85**

Scenario 2 Daily Emissions

Activity	**ROG (lb/day)**	**CO (lb/day)**	**NO_x (lb/day)**	**SO_x (lb/day)**	**PM_{10} (lb/day)**	**$PM_{2.5}$ (lb/day)**
Telecommunications Line Belowground Work	2.77	8.20	25.99	0.03	1.02	0.85
Total	**2.77**	**8.20**	**25.99**	**0.03**	**1.02**	**0.85**

Scenario 3 Daily Emissions

Activity	**ROG (lb/day)**	**CO (lb/day)**	**NO_x (lb/day)**	**SO_x (lb/day)**	**PM_{10} (lb/day)**	**$PM_{2.5}$ (lb/day)**
Telecommunication Wood Pole Removal	6.54	18.68	59.52	0.07	2.32	2.01
Total	**6.54**	**18.68**	**59.52**	**0.07**	**2.32**	**2.01**

Scenario 4 Daily Emissions

Activity	**ROG (lb/day)**	**CO (lb/day)**	**NO_x (lb/day)**	**SO_x (lb/day)**	**PM_{10} (lb/day)**	**$PM_{2.5}$ (lb/day)**
Telecommunication LWC Pole Haul	3.76	10.81	35.70	0.04	1.36	1.17
Total	**3.76**	**10.81**	**35.70**	**0.04**	**1.36**	**1.17**

Scenario 5 Daily Emissions

Activity	**ROG (lb/day)**	**CO (lb/day)**	**NO_x (lb/day)**	**SO_x (lb/day)**	**PM_{10} (lb/day)**	**$PM_{2.5}$ (lb/day)**
Telecommunication Pole Assembly	3.54	11.34	27.86	0.04	1.27	1.01
Total	**3.54**	**11.34**	**27.86**	**0.04**	**1.27**	**1.01**

Scenario 6 Daily Emissions

Activity	**ROG (lb/day)**	**CO (lb/day)**	**NO_x (lb/day)**	**SO_x (lb/day)**	**PM_{10} (lb/day)**	**$PM_{2.5}$ (lb/day)**
Telecommunication Install LWS Pole	5.27	18.10	44.77	0.05	2.17	1.88
Total	**5.27**	**18.10**	**44.77**	**0.05**	**2.17**	**1.88**

SCAB Fleet Average Emission Factors (Diesel)

Offroad-2010

Air Basin	SC

			(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	**MaxHP**		**ROG**	**CO**	**NOX**	**SOX**	**PM**	**CO2**	**CH4**
Aerial Lifts	15	Aerial Lifts 0015	0.0104	0.0529	0.0662	0.0001	0.0037	8.7	0.0009
Aerial Lifts	25	Aerial Lifts 0025	0.0210	0.0577	0.1013	0.0001	0.0065	11.0	0.0019
Aerial Lifts	50	Aerial Lifts 0050	0.0756	0.1937	0.1984	0.0003	0.0189	19.6	0.0068
Aerial Lifts	120	Aerial Lifts 0120	0.0702	0.2501	0.4502	0.0004	0.0361	38.1	0.0063
Aerial Lifts	500	Aerial Lifts 0500	0.1506	0.5801	1.9198	0.0021	0.0598	213	0.0136
Aerial Lifts	750	Aerial Lifts 0750	0.2803	1.0486	3.5605	0.0039	0.1096	385	0.0253
Aerial Lifts		Aerial Lifts 0000	0.0670	0.2093	0.3600	0.0004	0.0248	34.7	0.0060
Air Compressors	15	Air Compressors 0015	0.0144	0.0513	0.0838	0.0001	0.0061	7.2	0.0013
Air Compressors	25	Air Compressors 0025	0.0325	0.0847	0.1397	0.0002	0.0098	14.4	0.0029
Air Compressors	50	Air Compressors 0050	0.1163	0.2813	0.2386	0.0003	0.0265	22.3	0.0105
Air Compressors	120	Air Compressors 0120	0.1014	0.3351	0.5977	0.0006	0.0545	47.0	0.0091
Air Compressors	175	Air Compressors 0175	0.1274	0.5113	1.0082	0.0010	0.0568	88.5	0.0115
Air Compressors	250	Air Compressors 0250	0.1225	0.3413	1.3983	0.0015	0.0462	131	0.0111
Air Compressors	500	Air Compressors 0500	0.1943	0.6778	2.2062	0.0023	0.0752	232	0.0175
Air Compressors	750	Air Compressors 0750	0.3054	1.0476	3.5002	0.0036	0.1179	358	0.0276
Air Compressors	1000	Air Compressors 1000	0.5203	1.8591	6.0195	0.0049	0.1809	486	0.0469
Air Compressors		Air Compressors 0000	0.1120	0.3613	0.7320	0.0007	0.0526	63.6	0.0101
Bore/Drill Rigs	15	Bore/Drill Rigs 0015	0.0120	0.0632	0.0754	0.0002	0.0031	10.3	0.0011
Bore/Drill Rigs	25	Bore/Drill Rigs 0025	0.0196	0.0660	0.1257	0.0002	0.0065	16.0	0.0018
Bore/Drill Rigs	50	Bore/Drill Rigs 0050	0.0545	0.2505	0.2820	0.0004	0.0194	31.0	0.0049
Bore/Drill Rigs	120	Bore/Drill Rigs 0120	0.0722	0.4812	0.6155	0.0009	0.0456	77.1	0.0065
Bore/Drill Rigs	175	Bore/Drill Rigs 0175	0.0930	0.7543	0.9148	0.0016	0.0481	141	0.0084
Bore/Drill Rigs	250	Bore/Drill Rigs 0250	0.0957	0.3460	1.1847	0.0021	0.0384	188	0.0086
Bore/Drill Rigs	500	Bore/Drill Rigs 0500	0.1488	0.5566	1.7054	0.0031	0.0614	311	0.0134
Bore/Drill Rigs	750	Bore/Drill Rigs 0750	0.2996	1.0997	3.4821	0.0062	0.1231	615	0.0270
Bore/Drill Rigs	1000	Bore/Drill Rigs 1000	0.5360	1.7074	8.3092	0.0093	0.2078	928	0.0484
Bore/Drill Rigs		Bore/Drill Rigs 0000	0.1052	0.5146	1.1331	0.0017	0.0498	165	0.0095
Cement and Mortar Mi	15	Cement and Mortar Mixers 0015	0.0079	0.0388	0.0505	0.0001	0.0029	6.3	0.0007
Cement and Mortar Mi	25	Cement and Mortar Mixers 0025	0.0346	0.0942	0.1633	0.0002	0.0107	17.6	0.0031

Cement and Mortar Mixers		Cement and Mortar Mixers 0000	0.0101	0.0434	0.0599	0.0001	0.0035	7.2	0.0009
Concrete/Industrial Sa	25	Concrete/Industrial Saws 0025	0.0200	0.0678	0.1279	0.0002	0.0063	16.5	0.0018
Concrete/Industrial Sa	50	Concrete/Industrial Saws 0050	0.1231	0.3210	0.3070	0.0004	0.0301	30.2	0.0111
Concrete/Industrial Sa	120	Concrete/Industrial Saws 0120	0.1342	0.4976	0.8601	0.0009	0.0719	74.1	0.0121
Concrete/Industrial Sa	175	Concrete/Industrial Saws 0175	0.1927	0.8786	1.6459	0.0018	0.0864	160	0.0174
Concrete/Industrial Saws		Concrete/Industrial Saws 0000	0.1270	0.4273	0.6566	0.0007	0.0552	58.5	0.0115
Cranes	50	Cranes 0050	0.1284	0.3166	0.2547	0.0003	0.0289	23.2	0.0116
Cranes	120	Cranes 0120	0.1117	0.3723	0.6542	0.0006	0.0602	50.1	0.0101
Cranes	175	Cranes 0175	0.1211	0.4880	0.9302	0.0009	0.0538	80.3	0.0109
Cranes	250	Cranes 0250	0.1243	0.3464	1.2372	0.0013	0.0470	112	0.0112
Cranes	500	Cranes 0500	0.1821	0.6625	1.7722	0.0018	0.0685	180	0.0164
Cranes	750	Cranes 0750	0.3082	1.1113	3.0564	0.0030	0.1166	303	0.0278
Cranes	9999	Cranes 9999	1.0894	4.1317	12.1879	0.0098	0.3792	971	0.0983
Cranes		Cranes 0000	0.1594	0.5431	1.4515	0.0014	0.0642	129	0.0144
Crawler Tractors	50	Crawler Tractors 0050	0.1446	0.3520	0.2780	0.0003	0.0320	24.9	0.0131
Crawler Tractors	120	Crawler Tractors 0120	0.1551	0.5018	0.9038	0.0008	0.0819	65.8	0.0140
Crawler Tractors	175	Crawler Tractors 0175	0.1941	0.7597	1.4788	0.0014	0.0856	121	0.0175
Crawler Tractors	250	Crawler Tractors 0250	0.2051	0.5743	1.9440	0.0019	0.0784	166	0.0185
Crawler Tractors	500	Crawler Tractors 0500	0.2913	1.1931	2.7255	0.0025	0.1101	259	0.0263
Crawler Tractors	750	Crawler Tractors 0750	0.5240	2.1290	4.9881	0.0047	0.1989	465	0.0473
Crawler Tractors	1000	Crawler Tractors 1000	0.7980	3.3726	8.5998	0.0066	0.2810	658	0.0720
Crawler Tractors		Crawler Tractors 0000	0.1861	0.6409	1.3854	0.0013	0.0854	114	0.0168
Crushing/Proc. Equipn	50	Crushing/Proc. Equipment 0050	0.2271	0.5592	0.4700	0.0006	0.0520	44.0	0.0205
Crushing/Proc. Equipn	120	Crushing/Proc. Equipment 0120	0.1760	0.5956	1.0382	0.0010	0.0960	83.1	0.0159
Crushing/Proc. Equipn	175	Crushing/Proc. Equipment 0175	0.2367	0.9736	1.8607	0.0019	0.1068	167	0.0214
Crushing/Proc. Equipn	250	Crushing/Proc. Equipment 0250	0.2243	0.6225	2.5465	0.0028	0.0841	245	0.0202
Crushing/Proc. Equipn	500	Crushing/Proc. Equipment 0500	0.3091	1.0542	3.4510	0.0037	0.1187	374	0.0279
Crushing/Proc. Equipn	750	Crushing/Proc. Equipment 0750	0.4956	1.6226	5.6506	0.0059	0.1900	589	0.0447
Crushing/Proc. Equipn	9999	Crushing/Proc. Equipment 9999	1.3820	4.8014	16.0752	0.0131	0.4812	1,308	0.1247
Crushing/Proc. Equipment		Crushing/Proc. Equipment 0000	0.2152	0.7260	1.4394	0.0015	0.0935	132	0.0194
Dumpers/Tenders	25	Dumpers/Tenders 0025	0.0108	0.0336	0.0645	0.0001	0.0036	7.6	0.0010
Dumpers/Tenders		Dumpers/Tenders 0000	0.0108	0.0336	0.0645	0.0001	0.0036	7.6	0.0010
Excavators	25	Excavators 0025	0.0199	0.0677	0.1261	0.0002	0.0057	16.4	0.0018
Excavators	50	Excavators 0050	0.1131	0.3145	0.2638	0.0003	0.0276	25.0	0.0102
Excavators	120	Excavators 0120	0.1398	0.5318	0.8402	0.0009	0.0781	73.6	0.0126
Excavators	175	Excavators 0175	0.1465	0.6701	1.1143	0.0013	0.0663	112	0.0132
Excavators	250	Excavators 0250	0.1451	0.3934	1.4935	0.0018	0.0519	159	0.0131

Excavators	500	Excavators 0500	0.1984	0.6161	1.9285	0.0023	0.0711	234	0.0179
Excavators	750	Excavators 0750	0.3313	1.0196	3.3023	0.0039	0.1198	387	0.0299
Excavators		Excavators 0000	0.1483	0.5581	1.1502	0.0013	0.0638	120	0.0134
Forklifts	50	Forklifts 0050	0.0666	0.1824	0.1530	0.0002	0.0163	14.7	0.0060
Forklifts	120	Forklifts 0120	0.0601	0.2243	0.3497	0.0004	0.0342	31.2	0.0054
Forklifts	175	Forklifts 0175	0.0738	0.3306	0.5540	0.0006	0.0337	56.1	0.0067
Forklifts	250	Forklifts 0250	0.0652	0.1707	0.7163	0.0009	0.0227	77.1	0.0059
Forklifts	500	Forklifts 0500	0.0868	0.2343	0.8909	0.0011	0.0307	111	0.0078
Forklifts		Forklifts 0000	0.0686	0.2319	0.5161	0.0006	0.0281	54.4	0.0062
Generator Sets	15	Generator Sets 0015	0.0172	0.0726	0.1154	0.0002	0.0069	10.2	0.0016
Generator Sets	25	Generator Sets 0025	0.0300	0.1033	0.1705	0.0002	0.0107	17.6	0.0027
Generator Sets	50	Generator Sets 0050	0.1117	0.2904	0.3070	0.0004	0.0284	30.6	0.0101
Generator Sets	120	Generator Sets 0120	0.1395	0.5054	0.9075	0.0009	0.0714	77.9	0.0126
Generator Sets	175	Generator Sets 0175	0.1672	0.7471	1.4780	0.0016	0.0721	142	0.0151
Generator Sets	250	Generator Sets 0250	0.1618	0.5018	2.0720	0.0024	0.0618	213	0.0146
Generator Sets	500	Generator Sets 0500	0.2305	0.8858	2.9974	0.0033	0.0917	337	0.0208
Generator Sets	750	Generator Sets 0750	0.3838	1.4300	4.9646	0.0055	0.1502	544	0.0346
Generator Sets	9999	Generator Sets 9999	1.0080	3.6008	12.1384	0.0105	0.3600	1,049	0.0909
Generator Sets		Generator Sets 0000	0.0961	0.3293	0.6440	0.0007	0.0396	61.0	0.0087
Graders	50	Graders 0050	0.1400	0.3584	0.2961	0.0004	0.0323	27.5	0.0126
Graders	120	Graders 0120	0.1553	0.5459	0.9268	0.0009	0.0849	75.0	0.0140
Graders	175	Graders 0175	0.1743	0.7409	1.3532	0.0014	0.0783	124	0.0157
Graders	250	Graders 0250	0.1761	0.4934	1.7904	0.0019	0.0662	172	0.0159
Graders	500	Graders 0500	0.2149	0.7523	2.1198	0.0023	0.0807	229	0.0194
Graders	750	Graders 0750	0.4580	1.5877	4.6098	0.0049	0.1729	486	0.0413
Graders		Graders 0000	0.1723	0.6314	1.4338	0.0015	0.0753	133	0.0155
Off-Highway Tractors	120	Off-Highway Tractors 0120	0.2457	0.7439	1.4200	0.0011	0.1255	93.7	0.0222
Off-Highway Tractors	175	Off-Highway Tractors 0175	0.2326	0.8561	1.7665	0.0015	0.1014	130	0.0210
Off-Highway Tractors	250	Off-Highway Tractors 0250	0.1881	0.5347	1.7050	0.0015	0.0735	130	0.0170
Off-Highway Tractors	750	Off-Highway Tractors 0750	0.7400	3.5496	6.8440	0.0057	0.2854	568	0.0668
Off-Highway Tractors	1000	Off-Highway Tractors 1000	1.1197	5.5155	11.4633	0.0082	0.4009	814	0.1010
Off-Highway Tractors		Off-Highway Tractors 0000	0.2368	0.8385	1.9897	0.0017	0.0974	151	0.0214
Off-Highway Trucks	175	Off-Highway Trucks 0175	0.1732	0.7625	1.2796	0.0014	0.0771	125	0.0156
Off-Highway Trucks	250	Off-Highway Trucks 0250	0.1639	0.4301	1.6150	0.0019	0.0574	167	0.0148
Off-Highway Trucks	500	Off-Highway Trucks 0500	0.2492	0.7542	2.3188	0.0027	0.0872	272	0.0225
Off-Highway Trucks	750	Off-Highway Trucks 0750	0.4069	1.2210	3.8814	0.0044	0.1436	442	0.0367
Off-Highway Trucks	1000	Off-Highway Trucks 1000	0.6440	2.0615	7.3260	0.0063	0.2219	625	0.0581

Off-Highway Trucks		Off-Highway Trucks 0000	0.2480	0.7429	2.3885	0.0027	0.0875	260	0.0224
Other Construction Eq	15	Other Construction Equipment 0015	0.0118	0.0617	0.0737	0.0002	0.0030	10.1	0.0011
Other Construction Eq	25	Other Construction Equipment 0025	0.0162	0.0545	0.1039	0.0002	0.0053	13.2	0.0015
Other Construction Eq	50	Other Construction Equipment 0050	0.1033	0.2930	0.2787	0.0004	0.0263	28.0	0.0093
Other Construction Eq	120	Other Construction Equipment 0120	0.1320	0.5419	0.8649	0.0009	0.0740	80.9	0.0119
Other Construction Eq	175	Other Construction Equipment 0175	0.1168	0.5901	0.9927	0.0012	0.0543	107	0.0105
Other Construction Eq	500	Other Construction Equipment 0500	0.1705	0.6068	1.9821	0.0025	0.0678	254	0.0154
Other Construction Equipment		Other Construction Equipment 0000	0.1056	0.4108	1.0117	0.0013	0.0442	123	0.0095
Other General Industri	15	Other General Industrial Equipmen 0015	0.0066	0.0391	0.0466	0.0001	0.0017	6.4	0.0006
Other General Industri	25	Other General Industrial Equipmen 0025	0.0186	0.0632	0.1177	0.0002	0.0054	15.3	0.0017
Other General Industri	50	Other General Industrial Equipmen 0050	0.1281	0.3073	0.2413	0.0003	0.0285	21.7	0.0116
Other General Industri	120	Other General Industrial Equipmen 0120	0.1459	0.4647	0.8218	0.0007	0.0795	62.0	0.0132
Other General Industri	175	Other General Industrial Equipmen 0175	0.1516	0.5816	1.1364	0.0011	0.0676	95.9	0.0137
Other General Industri	250	Other General Industrial Equipmen 0250	0.1400	0.3676	1.5016	0.0015	0.0509	136	0.0126
Other General Industri	500	Other General Industrial Equipmen 0500	0.2500	0.8031	2.6018	0.0026	0.0919	265	0.0226
Other General Industri	750	Other General Industrial Equipmen 0750	0.4153	1.3236	4.4083	0.0044	0.1538	437	0.0375
Other General Industri	1000	Other General Industrial Equipmen 1000	0.6374	2.2063	7.1530	0.0056	0.2212	560	0.0575
Other General Industrial Equipmen		Other General Industrial Equipmen 0000	0.1847	0.5948	1.6649	0.0016	0.0740	152	0.0167
Other Material Handlin	50	Other Material Handling Equipment 0050	0.1773	0.4246	0.3355	0.0004	0.0395	30.3	0.0160
Other Material Handlin	120	Other Material Handling Equipment 0120	0.1417	0.4524	0.8014	0.0007	0.0772	60.7	0.0128
Other Material Handlin	175	Other Material Handling Equipment 0175	0.1914	0.7367	1.4429	0.0014	0.0856	122	0.0173
Other Material Handlin	250	Other Material Handling Equipment 0250	0.1481	0.3917	1.6024	0.0016	0.0542	145	0.0134
Other Material Handlin	500	Other Material Handling Equipment 0500	0.1782	0.5784	1.8750	0.0019	0.0660	192	0.0161
Other Material Handlin	9999	Other Material Handling Equipment 9999	0.8390	2.9174	9.4509	0.0073	0.2912	741	0.0757
Other Material Handling Equipment		Other Material Handling Equipment 0000	0.1773	0.5556	1.6150	0.0015	0.0715	141	0.0160
Pavers	25	Pavers 0025	0.0278	0.0845	0.1603	0.0002	0.0092	18.7	0.0025
Pavers	50	Pavers 0050	0.1624	0.3860	0.3110	0.0004	0.0356	28.0	0.0147
Pavers	120	Pavers 0120	0.1638	0.5223	0.9693	0.0008	0.0853	69.2	0.0148
Pavers	175	Pavers 0175	0.2049	0.7959	1.6028	0.0014	0.0903	128	0.0185
Pavers	250	Pavers 0250	0.2426	0.7011	2.3337	0.0022	0.0953	194	0.0219
Pavers	500	Pavers 0500	0.2622	1.1661	2.5319	0.0023	0.1023	233	0.0237
Pavers		Pavers 0000	0.1774	0.5644	0.9868	0.0009	0.0709	77.9	0.0160
Paving Equipment	25	Paving Equipment 0025	0.0155	0.0521	0.0993	0.0002	0.0051	12.6	0.0014
Paving Equipment	50	Paving Equipment 0050	0.1384	0.3277	0.2654	0.0003	0.0303	23.9	0.0125
Paving Equipment	120	Paving Equipment 0120	0.1282	0.4084	0.7600	0.0006	0.0668	54.5	0.0116
Paving Equipment	175	Paving Equipment 0175	0.1599	0.6208	1.2577	0.0011	0.0704	101	0.0144
Paving Equipment	250	Paving Equipment 0250	0.1506	0.4363	1.4619	0.0014	0.0592	122	0.0136

Paving Equipment		Paving Equipment 0000	0.1336	0.4478	0.8963	0.0008	0.0629	68.9	0.0121
Plate Compactors	15	Plate Compactors 0015	0.0050	0.0263	0.0317	0.0001	0.0015	4.3	0.0005
Plate Compactors		Plate Compactors 0000	0.0050	0.0263	0.0317	0.0001	0.0015	4.3	0.0005
Pressure Washers	15	Pressure Washers 0015	0.0083	0.0348	0.0553	0.0001	0.0033	4.9	0.0007
Pressure Washers	25	Pressure Washers 0025	0.0122	0.0419	0.0691	0.0001	0.0043	7.1	0.0011
Pressure Washers	50	Pressure Washers 0050	0.0413	0.1143	0.1388	0.0002	0.0115	14.3	0.0037
Pressure Washers	120	Pressure Washers 0120	0.0388	0.1487	0.2674	0.0003	0.0193	24.1	0.0035
Pressure Washers		Pressure Washers 0000	0.0199	0.0666	0.0989	0.0001	0.0070	9.4	0.0018
Pumps	15	Pumps 0015	0.0148	0.0528	0.0862	0.0001	0.0062	7.4	0.0013
Pumps	25	Pumps 0025	0.0439	0.1142	0.1884	0.0002	0.0133	19.5	0.0040
Pumps	50	Pumps 0050	0.1339	0.3428	0.3479	0.0004	0.0333	34.3	0.0121
Pumps	120	Pumps 0120	0.1441	0.5136	0.9216	0.0009	0.0744	77.9	0.0130
Pumps	175	Pumps 0175	0.1709	0.7489	1.4815	0.0016	0.0742	140	0.0154
Pumps	250	Pumps 0250	0.1593	0.4846	1.9941	0.0023	0.0609	201	0.0144
Pumps	500	Pumps 0500	0.2450	0.9411	3.1080	0.0034	0.0973	345	0.0221
Pumps	750	Pumps 0750	0.4167	1.5559	5.2721	0.0057	0.1631	571	0.0376
Pumps	9999	Pumps 9999	1.3269	4.8008	15.8590	0.0136	0.4723	1,355	0.1197
Pumps		Pumps 0000	0.0936	0.3096	0.5545	0.0006	0.0393	49.6	0.0084
Rollers	15	Rollers 0015	0.0074	0.0386	0.0461	0.0001	0.0019	6.3	0.0007
Rollers	25	Rollers 0025	0.0164	0.0551	0.1049	0.0002	0.0054	13.3	0.0015
Rollers	50	Rollers 0050	0.1270	0.3169	0.2753	0.0003	0.0292	26.0	0.0115
Rollers	120	Rollers 0120	0.1201	0.4177	0.7383	0.0007	0.0641	59.0	0.0108
Rollers	175	Rollers 0175	0.1478	0.6270	1.2022	0.0012	0.0659	108	0.0133
Rollers	250	Rollers 0250	0.1542	0.4540	1.6232	0.0017	0.0603	153	0.0139
Rollers	500	Rollers 0500	0.1987	0.7785	2.0882	0.0022	0.0783	219	0.0179
Rollers		Rollers 0000	0.1176	0.4212	0.7749	0.0008	0.0547	67.1	0.0106
Rough Terrain Forklifts	50	Rough Terrain Forklifts 0050	0.1590	0.4186	0.3558	0.0004	0.0377	33.9	0.0143
Rough Terrain Forklifts	120	Rough Terrain Forklifts 0120	0.1213	0.4447	0.7326	0.0007	0.0676	62.4	0.0109
Rough Terrain Forklifts	175	Rough Terrain Forklifts 0175	0.1640	0.7302	1.2875	0.0014	0.0749	125	0.0148
Rough Terrain Forklifts	250	Rough Terrain Forklifts 0250	0.1523	0.4270	1.6632	0.0019	0.0567	171	0.0137
Rough Terrain Forklifts	500	Rough Terrain Forklifts 0500	0.2097	0.6871	2.1987	0.0025	0.0788	257	0.0189
Rough Terrain Forklifts		Rough Terrain Forklifts 0000	0.1272	0.4766	0.7988	0.0008	0.0678	70.3	0.0115
Rubber Tired Dozers	175	Rubber Tired Dozers 0175	0.2398	0.8686	1.7881	0.0015	0.1036	129	0.0216
Rubber Tired Dozers	250	Rubber Tired Dozers 0250	0.2776	0.7758	2.4482	0.0021	0.1071	183	0.0250
Rubber Tired Dozers	500	Rubber Tired Dozers 0500	0.3621	1.7411	3.2071	0.0026	0.1370	265	0.0327
Rubber Tired Dozers	750	Rubber Tired Dozers 0750	0.5457	2.6075	4.9024	0.0040	0.2071	399	0.0492
Rubber Tired Dozers	1000	Rubber Tired Dozers 1000	0.8464	4.1786	8.4813	0.0060	0.3018	592	0.0764

Rubber Tired Dozers		Rubber Tired Dozers 0000	0.3379	1.4127	2.9891	0.0025	0.1288	239	0.0305
Rubber Tired Loaders	25	Rubber Tired Loaders 0025	0.0206	0.0697	0.1314	0.0002	0.0064	16.9	0.0019
Rubber Tired Loaders	50	Rubber Tired Loaders 0050	0.1560	0.4005	0.3333	0.0004	0.0361	31.1	0.0141
Rubber Tired Loaders	120	Rubber Tired Loaders 0120	0.1206	0.4268	0.7227	0.0007	0.0660	58.9	0.0109
Rubber Tired Loaders	175	Rubber Tired Loaders 0175	0.1476	0.6326	1.1513	0.0012	0.0664	106	0.0133
Rubber Tired Loaders	250	Rubber Tired Loaders 0250	0.1493	0.4210	1.5357	0.0017	0.0563	149	0.0135
Rubber Tired Loaders	500	Rubber Tired Loaders 0500	0.2172	0.7648	2.1684	0.0023	0.0819	237	0.0196
Rubber Tired Loaders	750	Rubber Tired Loaders 0750	0.4484	1.5625	4.5660	0.0049	0.1700	486	0.0405
Rubber Tired Loaders	1000	Rubber Tired Loaders 1000	0.6154	2.2308	7.1368	0.0060	0.2156	594	0.0555
Rubber Tired Loaders		Rubber Tired Loaders 0000	0.1440	0.5078	1.1537	0.0012	0.0651	109	0.0130
Scrapers	120	Scrapers 0120	0.2236	0.7169	1.3034	0.0011	0.1177	93.9	0.0202
Scrapers	175	Scrapers 0175	0.2391	0.9290	1.8284	0.0017	0.1053	148	0.0216
Scrapers	250	Scrapers 0250	0.2618	0.7368	2.4818	0.0024	0.1006	209	0.0236
Scrapers	500	Scrapers 0500	0.3650	1.5182	3.4250	0.0032	0.1386	321	0.0329
Scrapers	750	Scrapers 0750	0.6328	2.6115	6.0373	0.0056	0.2413	555	0.0571
Scrapers		Scrapers 0000	0.3202	1.2424	2.9078	0.0027	0.1256	262	0.0289
Signal Boards	15	Signal Boards 0015	0.0072	0.0377	0.0450	0.0001	0.0017	6.2	0.0006
Signal Boards	50	Signal Boards 0050	0.1492	0.3827	0.3689	0.0005	0.0364	36.2	0.0135
Signal Boards	120	Signal Boards 0120	0.1495	0.5380	0.9446	0.0009	0.0792	80.2	0.0135
Signal Boards	175	Signal Boards 0175	0.1907	0.8437	1.6203	0.0017	0.0846	155	0.0172
Signal Boards	250	Signal Boards 0250	0.2049	0.6138	2.5094	0.0029	0.0789	255	0.0185
Signal Boards		Signal Boards 0000	0.0224	0.0953	0.1615	0.0002	0.0091	16.7	0.0020
Skid Steer Loaders	25	Skid Steer Loaders 0025	0.0249	0.0700	0.1252	0.0002	0.0079	13.8	0.0022
Skid Steer Loaders	50	Skid Steer Loaders 0050	0.0785	0.2507	0.2463	0.0003	0.0217	25.5	0.0071
Skid Steer Loaders	120	Skid Steer Loaders 0120	0.0607	0.2822	0.4131	0.0005	0.0355	42.8	0.0055
Skid Steer Loaders		Skid Steer Loaders 0000	0.0692	0.2489	0.2919	0.0004	0.0252	30.3	0.0062
Surfacing Equipment	50	Surfacing Equipment 0050	0.0589	0.1520	0.1451	0.0002	0.0142	14.1	0.0053
Surfacing Equipment	120	Surfacing Equipment 0120	0.1192	0.4334	0.7683	0.0007	0.0624	63.8	0.0108
Surfacing Equipment	175	Surfacing Equipment 0175	0.1071	0.4787	0.9169	0.0010	0.0472	85.8	0.0097
Surfacing Equipment	250	Surfacing Equipment 0250	0.1254	0.3883	1.3783	0.0015	0.0494	135	0.0113
Surfacing Equipment	500	Surfacing Equipment 0500	0.1854	0.7785	2.0517	0.0022	0.0741	221	0.0167
Surfacing Equipment	750	Surfacing Equipment 0750	0.2960	1.2171	3.2929	0.0035	0.1173	347	0.0267
Surfacing Equipment		Surfacing Equipment 0000	0.1550	0.6164	1.5685	0.0017	0.0606	166	0.0140
Sweepers/Scrubbers	15	Sweepers/Scrubbers 0015	0.0124	0.0729	0.0870	0.0002	0.0033	11.9	0.0011
Sweepers/Scrubbers	25	Sweepers/Scrubbers 0025	0.0239	0.0808	0.1524	0.0002	0.0075	19.6	0.0022
Sweepers/Scrubbers	50	Sweepers/Scrubbers 0050	0.1508	0.3893	0.3297	0.0004	0.0355	31.6	0.0136
Sweepers/Scrubbers	120	Sweepers/Scrubbers 0120	0.1490	0.5329	0.8645	0.0009	0.0843	75.0	0.0134

Sweepers/Scrubbers	175	Sweepers/Scrubbers 0175	0.1856	0.8049	1.4276	0.0016	0.0854	139	0.0167
Sweepers/Scrubbers	250	Sweepers/Scrubbers 0250	0.1344	0.3643	1.5598	0.0018	0.0489	162	0.0121
Sweepers/Scrubbers		Sweepers/Scrubbers 0000	0.1548	0.5380	0.8473	0.0009	0.0686	78.5	0.0140
Tractors/Loaders/Back	25	Tractors/Loaders/Backhoes 0025	0.0214	0.0681	0.1317	0.0002	0.0072	15.9	0.0019
Tractors/Loaders/Back	50	Tractors/Loaders/Backhoes 0050	0.1257	0.3548	0.3114	0.0004	0.0312	30.3	0.0113
Tractors/Loaders/Back	120	Tractors/Loaders/Backhoes 0120	0.0910	0.3623	0.5664	0.0006	0.0515	51.7	0.0082
Tractors/Loaders/Back	175	Tractors/Loaders/Backhoes 0175	0.1216	0.5881	0.9646	0.0011	0.0562	101	0.0110
Tractors/Loaders/Back	250	Tractors/Loaders/Backhoes 0250	0.1418	0.4037	1.5493	0.0019	0.0523	172	0.0128
Tractors/Loaders/Back	500	Tractors/Loaders/Backhoes 0500	0.2630	0.8495	2.7242	0.0039	0.0980	345	0.0237
Tractors/Loaders/Back	750	Tractors/Loaders/Backhoes 0750	0.3986	1.2725	4.2276	0.0058	0.1496	517	0.0360
Tractors/Loaders/Backhoes		Tractors/Loaders/Backhoes 0000	0.1021	0.3930	0.6747	0.0008	0.0521	66.8	0.0092
Trenchers	15	Trenchers 0015	0.0099	0.0517	0.0617	0.0001	0.0023	8.5	0.0009
Trenchers	25	Trenchers 0025	0.0400	0.1355	0.2555	0.0004	0.0125	32.9	0.0036
Trenchers	50	Trenchers 0050	0.1837	0.4365	0.3620	0.0004	0.0405	32.9	0.0166
Trenchers	120	Trenchers 0120	0.1509	0.4840	0.9082	0.0008	0.0776	64.9	0.0136
Trenchers	175	Trenchers 0175	0.2254	0.8843	1.7973	0.0016	0.0990	144	0.0203
Trenchers	250	Trenchers 0250	0.2770	0.8161	2.6802	0.0025	0.1103	223	0.0250
Trenchers	500	Trenchers 0500	0.3468	1.6352	3.4013	0.0031	0.1373	311	0.0313
Trenchers	750	Trenchers 0750	0.6586	3.0677	6.5218	0.0059	0.2602	587	0.0594
Trenchers		Trenchers 0000	0.1675	0.4907	0.7598	0.0007	0.0637	58.7	0.0151
Welders	15	Welders 0015	0.0124	0.0441	0.0720	0.0001	0.0052	6.2	0.0011
Welders	25	Welders 0025	0.0254	0.0661	0.1091	0.0001	0.0077	11.3	0.0023
Welders	50	Welders 0050	0.1231	0.3025	0.2724	0.0003	0.0287	26.0	0.0111
Welders	120	Welders 0120	0.0807	0.2738	0.4899	0.0005	0.0428	39.5	0.0073
Welders	175	Welders 0175	0.1333	0.5515	1.0896	0.0011	0.0590	98.2	0.0120
Welders	250	Welders 0250	0.1052	0.3022	1.2367	0.0013	0.0400	119	0.0095
Welders	500	Welders 0500	0.1327	0.4823	1.5648	0.0016	0.0520	168	0.0120
Welders		Welders 0000	0.0805	0.2246	0.2920	0.0003	0.0270	25.6	0.0073

SCENARIO 5 REVISED EQUIPMENT ESTIMATES

UG Cable Installation

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]
1-Ton Crew Cab Flat Bed, 4x4	300	4	2	1.31
Wire Truck/Trailer	350	6	2	1.97
Bucket Truck	250	6	1	0.98
Boom Truck	350	6	1	0.98
Puller	350	6	1	0.7
Static Truck/Tensioner	350	6	1	0.7

Subtransmission Vault Installation

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]
~~1-Ton Crew Cab, 4x4~~	~~300~~	~~8~~	~~4~~	~~5.25~~
Excavator	250	6	2	1.74
Dump Truck	350	8	2	2.62
Backhoe/Front Loader	125	4	1	0.36
Water Truck	350	8	1	0.93
30-Ton Crane Truck	500	6	1	1.5
Concrete Mixer Truck	350	2	3	0.98
Lowboy Truck/Trailer	450	4	1	0.47
Flat Bed Truck/Trailer	400	4	3	1.97

Subtransmission Duct Bank Installation

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]
1-Ton Crew Cab Flat Bed, 4x4	300	4	2	1.31
Pipe Truck/Trailer	275	6	1	0.98
~~Dump Truck~~	~~350~~	~~6~~	~~2~~	~~1.97~~
~~Backhoe/Front Loader~~	~~125~~	~~4~~	~~1~~	~~0.36~~
Compressor Trailer	60	4	1	0.41
~~Water Truck~~	~~350~~	~~4~~	~~2~~	~~0.93~~
~~Concrete Mixer Truck~~	~~350~~	~~2~~	~~3~~	~~0.98~~
~~Lowboy Truck/Trailer~~	~~500~~	~~4~~	~~1~~	~~0.68~~

Subtransmission Conduit Installation

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]
~~3/4-Ton Pick-up Truck, 4x4~~	~~300~~	~~5~~	~~2~~	~~1.64~~
~~1-Ton Crew Cab Flat Bed, 4x4~~	~~300~~	~~5~~	~~2~~	~~1.64~~
~~Compressor Trailer~~	~~120~~	~~5~~	~~1~~	~~0.66~~
80-Ton Rough Terrain Crane	350	6	1	0.75

SCENARIO 5 SUMMARY OF REVISED EQUIPMENT ESTIMATES

UG Cable Installation

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]
1-Ton Crew Cab Flat Bed, 4x4	300	4	2	1.31
Wire Truck/Trailer	350	6	2	1.97
Bucket Truck	250	6	1	0.98
Boom Truck	350	6	1	0.98
Puller	350	6	1	0.7
Static Truck/Tensioner	350	6	1	0.7

Subtransmission Vault, Duct Bank, and Conduit Installation

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]
Excavator	250	6	2	1.74
Dump Truck	350	8	2	2.62
Backhoe/Front Loader	125	4	1	0.36
Water Truck	350	8	1	0.93
30-Ton Crane Truck	500	6	1	1.5
Concrete Mixer Truck	350	2	3	0.98
Lowboy Truck/Trailer	450	4	1	0.47
Flat Bed Truck/Trailer	400	4	3	1.97
1-Ton Crew Cab, 4x4	300	4	2	1.31
Pipe Truck/Trailer	275	6	1	0.98
Compressor Trailer	60	4	1	0.41
80-Ton Rough Terrain Crane	350	6	1	0.75

Yellow highlighted equipment was identified as being double-counted in SCE's workforce estimate tables and therefore also double-counted in the AQ emissions calculations presented in the PFM. The Activity Set comprised of Subtransmission Vault Installation, Duct Bank Installation, and Conduit installation was therefore combined to correct the double counting and reflect a realistic estimate of equipment during these construction activities.

The revision results in a 15.34 lb/day reduction in peak daily ROG emissions over what was estimated in the PFM.