SUBCHAPTER 4.5

HYDROLOGY AND WATER QUALITY

4.5 HYDROLOGY AND WATER QUALITY

4.5.1 Introduction

This subchapter identifies potential hydrology and water quality impacts that may be generated by implementing the 2012 AQMP. Some of the control measures in the 2012 AQMP may result in impacts on water quality and increased wastewater discharge; water quality impacts associated with the use of alternative fuels; water quality impacts associated with increased use of batteries; increased water demand; and, water quality impacts associated with the use and application of sodium bisulfate for livestock operations.

4.5.2 2012 AQMP Control Measures with Potential Hydrology and Water Quality Impacts

The hydrology and water quality analysis in this Program EIR identifies the potential hydrology and water quality impacts from implementing the 2012 AQMP. All control measures were analyzed to identify the potential hydrology and water quality impacts. The NOP/IS determined that the proposed project could result in potentially significant water quality and water demand impacts.

The evaluation of the control measures was based on an examination of the impacts of the control measures and technologies. The evaluation of the control methods indicate that there are 34 control measures that could have potential water quality and water demand impacts. As shown in Table 4.5-1, four control measures for PM2.5 emission reductions and 21 control measures for reduction of ozone precursors were identified as having potential hydrology and water quality impacts.

TABLE 4.5-1

Control Measures with Potential Secondary Hydrology and Water Quality Impacts

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	WATER IMPACT
SHORT-TERM PM2.5 CONTROL MEASURES			
BCM-03 (*formerly BCM-05*)	Further PM Reductions from Under-Fired Charbroilers (PM2.5)	Add-On Control Equipment with Ventilation Hood Requirements (e.g., ESPs, HEPA filters, wet scrubbers, or thermal oxidizers).	Potential impacts on water demand and wastewater discharge from operating wet ESPs or wet scrubbers.
BCM-04	Further Ammonia Reductions from Livestock Waste	Reducing pH level in manure through the application of acidifier sodium bisulfate.	Potential water quality impacts from applying acidifier sodium bisulfate.
IND-01[a]	Backstop Measure for Indirect Sources of Emissions from Ports and Port-Related Facilities	Environmental lease conditions, port rules, tariffs or incentives.	Potential impacts on water demand and wastewater discharge from operating wet ESPs or wet scrubbers. Use of alternative fuels can result in water quality impacts.

TABLE 4.5-1 (Continued)

Control Measures with Potential Secondary Hydrology and Water Quality Impacts

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	WATER IMPACT
SHORT-TERM PM2.5 CONTROL MEASURES			
MCS-01[a]	Application of All Feasible Measures	SCAQMD~~District~~ would adopt and implement new retrofit technology control standards as new BARCT standards become available.	Potential impacts on water demand and wastewater discharge from operating wet ESPs or wet scrubbers, use of alternative fuels can result in water quality impacts, increase water demand and wastewater discharges from increased use of water-based formulations.
OZONE CONTROL MEASURES			
CTS-01	Further VOC Reductions from Architectural Coatings (Rule 1113) (VOC)	Reduce the allowable VOC content in product formulations by using alternative low-VOC products and use application techniques with greater transfer efficiency.	Potential impact on water demand and wastewater discharge associated with increased use of water-based formulations.
CTS-02	Further Emission Reduction from Miscellaneous Coatings, Adhesives, Solvents and Lubricants (VOC)	Reduce the allowable VOC content in product formulations by using alternative low-VOC products or non-VOC products/equipment.	Potential impact on water demand and wastewater discharge associated with increased use of water-based formulations.
CTS-03	Further VOC Reductions from Mold Release Products (VOC)	Limitation of VOC content for mold release products.	Potential impact on water demand and wastewater discharge associated with increased use of water-based formulations.
CTS-04	Further VOC Reductions from Consumer Products (VOC)	Eliminate or revise the exemption for low vapor pressure solvents in consumer products.	Potential impact on water demand and wastewater discharge associated with increased use of water-based formulations.
FUG-01	~~Further~~ VOC Reductions from Vacuum Trucks (VOC)	VOC control devices such as carbon adsorption systems, internal combustion engines, thermal oxidizers, refrigerated condensers, liquid scrubbers and positive displacement (PD) pumps.	Increased water demand and increased wastewater discharge associated with air pollution control equipment (e.g., wet scrubbers).
ONRD-01	Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles (NOx)	Incentives to replace older vehicles with electric or hybrid vehicles.	Use of alternative fuels can result in water quality impacts.
ONRD-02	Accelerated Retirement of Older Light-Duty and Medium-Duty Vehicles (NOx)	Incentives to replace older light- and medium-duty vehicles with new or newer low-emitting vehicles.	Use of alternative fuels can result in water quality impacts.

TABLE 4.5-1 (Continued)

Control Measures with Potential Secondary Hydrology and Water Quality Impacts

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	WATER IMPACT
OZONE CONTROL MEASURES			
ONRD-03	Accelerated Penetration of Partial Zero-Emission and Zero Emission Medium Heavy-Duty Vehicles (NOx)	Incentives to replace older medium-duty vehicles with low-emitting vehicles. Highest priority would be given to zero-emission vehicles and hybrid vehicles with a portion of their operation in an “all electric range” mode.	Use of alternative fuels can result in water quality impacts.
ONRD-04	Accelerated Retirement of Older Heavy-Duty Vehicles (NOx)	Incentives replace heavy-duty vehicles with newer or new vehicles. Priority would be placed on replacing older diesel trucks in Mira Loma.	Use of alternative fuels can result in water quality impacts.
ONRD-05	Further Emission Reductions from Heavy-Duty Vehicles Serving Near-Dock Railyards (NOx, PM)	Incentives to replace up to 1,000 heavy-duty vehicles with low-emitting vehicles or zero-emission container movement systems.	Use of alternative fuels can result in water quality impacts.
OFFRD-01	Extension of the SOON Provision for Construction/Industrial Equipment (NOx)	Accelerate Tier 0 and Tier 1 equipment replacement with Tier 4 equipment, use of air pollution control technologies (e.g., advanced fuel injection, air induction, and after-treatment technologies).	Use of alternative fuels can result in water quality impacts.
OFFRD-02	Further Emission Reductions from Freight Locomotives (NOx)	Replace existing engines (Tier 0 and Tier 2 engines) with Tier 4 engines with control equipment (e.g., SCRs, DPM filters, electric batteries, and alternative fuels).	Accidental release of ammonia and use of alternative fuels can result in water quality impacts; accidental release issues with acid spill from batteries could affect water quality.
OFFRD-03	Further Emission Reductions from Passenger Locomotives (NOx)	Repower existing Tier 0 and Tier 2 engines with Tier 4 engines with control equipment (e.g., SCRs, DPM filters, electric batteries, and alternative fuels).	Accidental release of ammonia and use of alternative fuels can result in water quality impacts; accidental release issues with acid spill from batteries could affect water quality.
OFFRD-04	Further Emission Reductions from Ocean-Going Marine Vessels at Berth	Shore power of vessels at berth, use of air pollution control technologies on exhaust gases from auxiliary engines and boilers (e.g., SCRs, DPM filters, electric batteries, and alternative fuels).	Accidental release of ammonia and use of alternative fuels can result in water quality impacts; accidental release issues with acid spill from batteries could affect water quality.

TABLE 4.5-1 (Concluded)

Control Measures with Potential Secondary Hydrology and Water Quality Impacts

CONTROL MEASURE	CONTROL MEASURE TITLE (POLLUTANT)	CONTROL METHODOLOGY	WATER IMPACT
OZONE CONTROL MEASURES			
ADV-01	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission On-Road Heavy-Duty Vehicles (NOx)	Construct "wayside" electric or magnetic infrastructure; construct battery charging and fueling infrastructure. Alternatively, if battery, fuel cell or other zero/near zero emission technologies progress sufficiently, the need for wayside power for rail or trucks may be diminished or eliminated.	Use of alternative fuels can result in water quality impacts, potential water quality impacts from EV battery disposal.
ADV-02	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Locomotives (NOx)	Construct "wayside" electric, magnetic, battery-hybrid system, or fuel cell infrastructure, construct battery charging or fueling infrastructure.	Use of alternative fuels can result in water quality impacts, potential water quality impacts from EV battery disposal.
ADV-03	Proposed Implementation Measures for the Deployment of Zero- and Near-Zero Emission Cargo Handling Equipment (NOx)	Construct electric gantry cranes, construct battery charging or fueling infrastructure, and use of alternative fuels.	Use of alternative fuels can result in water quality impacts, potential water quality impacts from EV battery disposal.
ADV-04	Actions for the Deployment of Cleaner Commercial Harborcraft (NOx)	Construct battery charging or fueling infrastructure, use of air pollution control equipment (e.g., SCR, and use of alternative fuels).	Use of alternative fuels can result in water quality impacts, potential water quality impacts from EV battery disposal.
ADV-05	Proposed Implementation Measures for the Deployment of Cleaner Ocean-Going Marine Vessels [NOx]	Employ aftertreatment control technologies such as SCR and sea water scrubbers, and use of alternative fuels.	Use of alternative fuels can result in water quality impacts, potential increased water demand and wastewater discharge associated with wet scrubbers.
ADV-06	Proposed Implementation Measures for the Deployment of Cleaner Off-Road Equipment [NOx]	Construct battery charging or fueling infrastructure, and increased use of alternative fuels.	Use of alternative fuels can result in water quality impacts, potential water quality impacts from EV battery disposal.
ADV-07	Proposed Implementation Measures for the Deployment of Cleaner Aircraft Engines(NOx)	Use alternative fuels, lean combustion burners, high rate turbo bypass, advanced turbo-compressor design, and engine weight reduction.	Use of alternative fuels can result in water quality impacts.

a The specific actions associated with the control measure are unknown and, therefore, the impacts are speculative. In order to provide a conservative analysis, it is assumed that the control measure could require air pollution control technologies that are similar to those that are currently required (e.g., SCR, electrification, use of alternative fuels, etc.), and would have the potential to require construction activities that would generate noise.

4.5.3 Significance Criteria

Potential impacts on water resources will be considered significant if any of the following criteria apply:

<u>Water Demand:</u>

- The existing water supply does not have the capacity to meet the increased demands of the project, or the project would use more than 262,820 gallons per day of potable water.
- The project increases total demand for water by more than five million gallons per day.

<u>Water Quality:</u>

- The project will cause degradation or depletion of ground water resources substantially affecting current or future uses.
- The project will cause the degradation of surface water substantially affecting current or future uses.
- The project will result in a violation of National Pollutant Discharge Elimination System (NPDES) permit requirements.
- The capacities of existing or proposed wastewater treatment facilities and the sanitary sewer system are not sufficient to meet the needs of the project.
- The project results in substantial increases in the area of impervious surfaces, such that interference with groundwater recharge efforts occurs.
- The project results in alterations to the course or flow of floodwaters.

4.5.4 Potential Hydrology and Water Quality Impacts and Mitigation Measures

4.5.4.1 Wastewater and Water Quality Impacts

4.5.4.1.1 Wastewater Impacts

PROJECT-SPECIFIC IMPACTS - WASTEWATER: The 2012 AQMP control measures that could require reformulation of coatings, adhesives, solvents, lubricants, mold release agents, and consumer products are MCS-01, CTS-01, CTS-02, CTS-03, and CTS-04. Emission reductions are expected to be achieved through the use of low or zero VOC formulations and reformulation of these materials may generate additional wastewater.

In addition, the 2012 AQMP includes stationary sources that may require add-on control equipment with the potential to generate additional wastewater (BCM-03, BCM-04, IND-01, MCS-01, FUG-01) associated with the use of wet electrostatic precipitators (ESPs) or wet gas scrubbers (WGS). The extent of the use of these types of control equipment is unknown. However, the use of wet ESPs and WGSs has been shown to be effective at reducing PM2.5 emissions and is a potential control methodology.

To meet the lowered future VOC content limits as a result of implementing Control Measures MCS-01, CTS-01, CTS-02, CTS-03, and CTS-04, coatings, adhesives, solvents, lubricants, mold release products, and consumer products are expected to be reformulated. While reformulated products would be expected to have lower VOC contents, the reformulations could have widely varying compositions depending on the chemical characteristics of the replacement solvents chosen. For example, most reformulations are expected to be made with water, but other reformulations could be made with an exempt solvent such as acetone or other solvents that are not exempted from the definition of a VOC in SCAQMD's Rule 102. As a result, for those products reformulated with water, then water would also be used for clean-up and the resultant wastewater material could be disposed of into the public sewer system. Further, other reformulated products made with exempt or non-exempt solvents may also lead to adverse impacts to water resources if clean-up and disposal of reformulated solvents, coatings or products are not handled properly. However, the use of water to reformulate coatings, solvents and products would generally lead to products that would be less toxic than products reformulated with either exempt or non-exempt chemicals (that are typically petroleum-based) and as such, generate fewer impacts to water quality. Lastly, because the development of reformulated products is expected to require the same types of equipment (e.g., spray guns, rollers, and brushes) currently used in coating operations, the corresponding clean-up practices employed to clean the coating equipment would also not be expected to change.

Table 4.5-2 estimates the "worst-case" potential increase of wastewater likely to be received by wastewater treatment plants in the district as a result of the implementing the 2012 AQMP control measures that pertain to product reformulations. The estimated increase in wastewater generated is considered to be within the projected capacity of the local wastewater treatment plants within the district. Wastewater generated from the reformulation of coatings and products is estimated to be about 47,000 gallons per day as compared to the estimated wastewater treatment capacity of about 2,370 million gallons in the district. These are expected to be "worst-case" estimates because a number of these materials are already in use are water-borne or low VOC materials. For example, most architectural coatings are already being sold with VOC content limits but Control Measure CTS-01 would further reduce the allowable VOC content from coatings that are already regulated. (The control measure may also require increased transfer efficiency of the coating equipment but no change in the formulation of coatings would be expected.) Further, low VOC mold release products are already being manufactured and sold, so the need for reformulation may be minor or not required at all, depending on the manufacturer.

TABLE 4.5-2

Projected Wastewater Impact from 2012 AQMP Control Measures

Control Measure	POTW Average Wastewater Flow[a] (million gal per day)	POTW Treatment Capacity[a] (million gal per day)	Estimated Affected Coating Usage (gal per year)	Projected Wastewater Flow (gallon per year)	Projected Wastewater Flow (gallons per day)	Total Impacts, Percent of POTW Average Daily Flow
CTS-01 Architectural Coatings	1,536	2,370	7,610,000[b]	7,610,000	20,849	0.001
CTS-02 Misc. Coatings, Adhesives, Solvents, Lubricants	1,536	2,370	3,805,000	3,805,000	10,425	0.0007
CTS-03 Mold Release Products	1,536	2,370	1,902,500	1,902,500	5,212	0.0003
CTS-04 Consumer Products	1,536	2,370	3,805,000	3,805,000	10,425	0.0007
Total Wastewater from Reformulated Coatings:			17,122,500	17,122,500	46,911	0.003
BCM-03, BCM-04, IND-09, and MSC-01	1,536	2,370	--	--	2,016,000	0.131
Total for all Control Measures:					2,062,911	0.134

a See Table 3.5-3.

b SCAQMD, 2011. Assume 2004 volume to account for decline in economic activity in Southern California.

c Architectural coatings are the largest coating category. This number represents the total universe of coating categories; however, it is likely that the control measure would only affect a small subset of the total number of coating categories. Miscellaneous Coatings, Consumer products and Consumer Products are assumed to be about 50 percent of the volume of architectural coatings, and mold release products are assumed to be about 25 percent of the volume of architectural coatings.

d Assumes 20 large wet ESPs/WGSs are installed as part of the AQMP.

As indicated in Table 4.5-1, several control measures proposed in the 2012 AQMP may require add-on control equipment (BCM-03, BCM-04, IND-01, and MSC-01) for stationary sources such as wet ESPs and WGSs, which have been shown to be effective at reducing PM2.5 emissions. If installed, wet ESPs and WGSs would require water to operate and thus, would result in the generation of wastewater. However, the extent of the use of these types of control equipment to be used in the future is unknown.

One wet ESP with one WGS were installed on the Fluid Catalytic Cracking Unit (FCCU) at the ConocoPhillips Refinery to reduce SOx emissions, as well as PM10 and PM2.5 emissions. The FCCU is a large source of emissions and the wet ESP and WGS installed were sized accordingly. The environmental analysis for this project indicated that the expected wastewater discharge from the combined operation of the wet ESP and WGS at ConocoPhillips was about 70 gallons per minute (about 100,800 gallons per day) (SCAQMD, 2007). Wet ESPs and WGSs of this size are primarily designed for large sources within the district (e.g., refineries and other large manufacturing facilities), but these technologies can also be scaled down for use on smaller sources. If the 2012 AQMP control measures encourage the installation of 20 additional wet ESP /WGS systems of this size, about two million gallons per day of wastewater would be generated. Wastewater from larger facilities such as refineries is often treated at existing wastewater treatment facilities operated by the facility, so increased wastewater may not be discharged to publicly owned treatment facilities. However, making the conservative assumption that the 2012 AQMP could result in the construction and installation of 20 large-scale wet ESP/WGS systems, the estimated increase in wastewater would be well within the existing wastewater treatment capacity within the district.

The potential increase in the volume of wastewater estimated as a result of implementing these control measures in the 2012 AQMP is also included in Table 4.5-2. The total increase in potential wastewater from implementing all of the control measures is estimated to be about 2.1 million gallons per day, which represents about a 0.1 percent increase in wastewater generated within the district. Further, the increase in wastewater is well within the capacity of the existing wastewater treatment plants of about 2,370 million gallons. Therefore, the wastewater impacts associated with the 2012 AQMP are expected to be less than significant.

PROJECT-SPECIFIC MITIGATION - WASTEWATER: Less than significant impacts on wastewater generation as a result of implementing the 2012 AQMP are expected so no mitigation measures are necessary or required.

REMAINING IMPACTS - WASTEWATER: The wastewater impacts associated with wastewater generation are expected to be less than significant. Thus, no remaining wastewater impacts are expected.

4.5.4.1.2 Water Quality Impacts

PROJECT-SPECIFIC IMPACTS – WATER QUALITY: In the past, concerns have been raised that the increased use of waterborne technologies to meet the lower VOC content limits would result in a greater trend of coating applicators to improperly dispose of the waste generated from these coatings into the ground, storm drains, or sewers systems. However, there is no data to support this contention.

Results from a survey of contractors conducted by the SCAQMD for the November 1996 amendments to SCAQMD Rule 1113 determined that a majority of coating applicators either dispose of the waste material properly as required by the coating manufacturer's MSDS or recycle the waste material regardless of type of coating[1].

[1] SCAQMD, Final Subsequent Environmental Assessment, SCAQMD No. 960626DWS, October 1996.

The survey was prepared to evaluate the replacement of solvent-borne coatings with reformulated, water-borne coatings. In November 2008, a paint manufacture conducted a survey of 180 Southern California residential and professional painters. The conclusion was that a majority professional painters use hazardous waste disposal services to dispose of coatings instead of air drying coatings and then disposing of as a solid waste. Based upon the survey results, there is no reason to expect that coating contractors would change their disposal practices, especially those contractors that already dispose of wastes properly. Similarly, there is also no evidence that there would be an increase in illegal disposal practices as a result of the proposed control measures.

Potential adverse water quality impacts associated with reformulated products are expected to be minimal since: 1) compliance with state and federal waste disposal regulations would substantially limit adverse impacts; 2) "turn-key" services are available for aqueous (water-based) cleaners; 3) some solvent cleaning operators may currently be disposing of spent material illegally, so one illegal activity would be replaced with another legal activity; and, 4) the amount of wastewater which may be generated from reformulated solvents and from air pollution control equipment is well within the projected receiving capacity of the Publicly Owned Treatment Works (POTWs) in the SCAQMD's jurisdiction. The treatment of wastewater at POTWs is accomplished under the control of numerous regulatory permits (e.g., National Pollutant Discharge Elimination System Permits or NPDES Permits) which require monitoring of the quality of wastewater on a frequent basis. For example, NPDES permit requirements for a local refinery requires monthly sampling for arsenic, cadmium, chromium, copper, cyanides, lead, mercury, nickel, zinc, silver, total phenol, pH, dissolved sulfides, chlorides, suspended solids, chemical oxygen demand, biochemical oxygen demand and ignitability. Daily sampling is required for ammonia, oil and grease, selenium and thiosulfate.

Since the reformulation of materials or additional use of air pollution control equipment is not expected to generate significant adverse water quality impacts industry-wide, no changes to existing wastewater treatment permits are expected to be required. As a result, it is expected that operators of affected facilities would continue to comply with existing wastewater treatment requirements of the applicable Regional Water Quality Control Boards or sanitation district.

Coating operations currently generate wastewater as part of clean-up activities. In addition, industrial operations that would be expected to use wet ESP/WGS systems are likely to also be large manufacturing facilities that currently generate wastewater. As discussed above, the reformulation of coatings to water-based coatings could have a beneficial effect by reducing the levels of contaminants currently found in the wastewater from these operations because there is an increasing trend toward less toxic waterborne coatings as water-based products are generally less toxic than solvent-based products. The amount of increased wastewater generated from coating operations would be well within the capacity of the region's POTWs. Consequently, water quality impacts from the 2012 AQMP control measures are not considered significant.

PROJECT-SPECIFIC MITIGATION - WATER QUALITY: Less than significant impacts on water quality as a result of implementing the 2012 AQMP are expected so no mitigation measures are necessary or required.

REMAINING IMPACTS – WATER QUALITY: The water quality impacts associated with implementing the 2012 AQMP are expected to be less than significant. Thus, no remaining water quality impacts are expected.

4.5.4.2 Alternative Transportation Fuels

PROJECT-SPECIFIC IMPACTS – ALTERNATIVE TRANSPORTATION FUELS: The following control measures in the 2012 AQMP may contribute to the increased use of alternative fuels in the SCAQMD's jurisdiction: IND-01, MSC-01, ONRD-01, ONRD-02, ONRD-03, ONRD-04, ONRD-05, OFFRD-01, OFFRD-02, OFFRD-03, OFFRD-04, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, ADV-06, and ADV-07. These control measures would generally require the increased use of alternative fuels (e.g., biodiesel fuels, compressed natural gas, liquefied natural gas, and hydrogen).

The SCAQMD amended Rule 431.2 - Sulfur Content of Liquid Fuels, in September 2000, which limited the sulfur content in diesel fuel used in stationary sources to 15 ppm by weight, effective January 1, 2005. Federal law extended this same requirement to also apply to diesel fuel used by mobile sources, effective June 1, 2006. Diesel fuels currently used in California are low sulfur fuels. As such, there is no evidence that the use of low sulfur diesel fuels has resulted in any water quality impacts, as the only difference in the fuel available on the market is the reduced concentration of sulfur.

In general, alternative fuels are expected to be less toxic than conventional fuels and follow a similar path as the low sulfur diesel. Biodiesel is a fuel derived from biological sources such as vegetable oils or animal fats. Biodiesel can be used pure or blended with conventional diesel. Because the biodiesel typically comes from vegetable oils or animal fats, it is generally less toxic and more biodegradable than conventional diesel, so the water quality impacts from a spill of biodiesel would be less than a spill of pure conventional diesel. The most common blended biodiesel is B20, which is 20 percent biodiesel and 80 percent conventional diesel. Therefore, the potential water quality impacts from the transport and storage of biodiesel and biodiesel blends is not expected to be substantially different than the transport and storage of conventional diesel.

The other types of alternative fuels that may be used as part of implementing some control measures in the 2012 AQMP include compressed natural gas, liquefied natural gas and hydrogen. Because all of these fuels exist as a gas at standard temperatures and pressures, a leak of any of these fuels would result in an airborne release, and not a release that could adversely affect water and water quality. There are a number of rules and regulations currently in place that are designed to minimize the potential impacts from underground leaking storage tanks and spills from fueling activities, including requirements for the construction of the storage tanks, requirements for double containment, and installation of leak detection systems. These regulations would also apply to any leaks of alternative fuels from storage tanks. Thus, the use of alternative fuels is not expected to result in any greater adverse water quality impacts than the use of conventional fuels like diesel or gasoline.

Lastly, none of the alternative fuels require water for their processing or distribution. Thus, any increased use of alternative fuels will not create an additional demand for water.

PROJECT SPECIFIC MITIGATION - ALTERNATIVE TRANSPORTATION FUELS: Less than significant hydrology and water quality impacts were identified from the use of alternative fuels as part of the 2012 AQMP so no mitigation measures are required.

REMAINING IMPACTS – ALTERNATIVE TRANSPORTATION FUELS: The hydrology and water quality impacts associated with implementing the 2012 AQMP are expected to be less than significant. Thus, no remaining hydrology or water quality impacts are expected from the projected increased use of alternative fuels.

4.5.4.3 Electric Vehicles

PROJECT-SPECIFIC IMPACT – ELECTRIC VEHICLES: Implementation of the 2012 AQMP could contribute to an increased use of electric vehicles. Table 4.5-3 estimates the number of electric vehicles that are expected to be put into service as part of implementing Control Measures ONRD-01, ONRD-03, ONRD-04, and ONRD-05. In addition to the control measures identified in Table 4.5-3, a number of other control measures would encourage the use of zero and near-zero emission vehicles and other equipment including ADV-01, ADV-02, ADV-03, ADV-04, ADV-06, and ADV-07. Since some batteries contain toxic materials, water impacts are possible if they are disposed of in an unsafe manner, such as by illegal dumping or by disposal in a landfill.

TABLE 4.5-3

Estimated Increase in Electric Vehicles

CONTROL MEASURE NO.	CONTROL MEASURE DESCRIPTION	ESTIMATED INCREASE IN VEHICLES
ONRD-01	Accelerated Penetration of Partial Zero-Emission and Zero Emission Vehicles	Incentivize 9,000 light- and medium-duty vehicles
ONRD-03	Accelerated Penetration of Partial Zero Emission and Aero Emission Medium Heavy-Duty Vehicles	Encourage introduction of 5,000 vehicles
ONRD-04	Accelerated Retirement of Older Heavy Duty Vehicles	Replace 5,000 vehicles
ONRD-05	Further Emission Reductions for Heavy-Duty Vehicles Serving Near-Dock Railyards	Replace 1,000 trucks with zero emission technologies

As interest in the use of electric vehicles has increased over the years, battery technologies have been developing and improving. Most battery technologies employ materials that are recyclable, since regulatory requirements and market forces encourage recycling. California laws create incentives and requirements for disposal of recycling of batteries as follows.

- Under CARB regulations, to certify either a new ZEV or retrofit an existing ZEV, automakers must complete CARB's certification application, which must include a battery disposal plan. Thus, current regulations require ZEV manufacturers to take account for the full life-cycle of car batteries and to plan for safe disposal or recycling of battery materials (SCAQMD, 2007). For example, Toyota offers $200 per battery to minimize illegal disposal of batteries.

- California law requires the recycling of lead-acid batteries (California Health & Safety Code §25215). Spent lead-acid batteries being reclaimed are regulated under 22 CCR §66266.80 and 66266.81, and 40 CFR part 266, Subpart G.

- California law requires state agencies to purchase car batteries made from recycled material (Public Resources Code §42440).

- As of February 8, 2006, household wastes such as batteries, electronic devices and fluorescent light bulbs may not be disposed of in a landfill by anyone.

Existing battery recovery and recycling programs have limited the disposal of batteries in landfills. For example, the recycling of lead-acid and nickel-cadmium batteries is already a well-established activity. Two secondary lead smelters (facilities that recycle lead-bearing materials) are located within the district. Both of these facilities receive spent lead-acid batteries and other lead bearing material and process them to recover lead and polypropylene (from the battery casings). Acid is collected and recycled as a neutralizing agent in the wastewater treatment system.

The availability of secondary lead smelters for battery recycling reduces the potential for the illegal disposal of batteries.

Implementation of the 2012 AQMP would be expected to result in an increased use of electric vehicles (EVs) and hybrid vehicles (hybrids) which use nickel-metal hydride (NiMh) and lithium ion (Li-ion) batteries, instead of lead-acid batteries. The most common battery technologies used in modern EVs and hybrids are NiMH and Li-ion batteries (Hybrid, 2008). EVs and hybrids both use electricity as part of their fuel system. EVs rely purely on electric power stored in batteries. Hybrids also use batteries as part of their fuel supply; however, hybrids supplement their electrical needs by using gasoline engines to generate either mechanical or electric power on demand. Since gasoline is a conventional fuel, any difference in water quality impacts associated with hybrid vehicles would be from the batteries. The electrolyte in NiMh batteries is an alkaline electrolyte, usually potassium hydroxide, the electrolyte in Li-ion batteries is a lithium salt in an organic solvent, while the electrolyte in lead-acid batteries is a sulfuric acid/water blend.

Batteries in hybrids are much larger than batteries in conventional vehicles. The current hybrid batteries weigh about 110 pounds and are composed of NiMH batteries which are charged by an internal combustion engine driven generator and/or by a regenerative braking system that captures power from deceleration and braking. These batteries have a longer life than conventional lead acid batteries. These high voltage batteries are warranteed for 10 years or 150,000 miles under California regulations.

The earliest Toyota Prius and Honda Insight and Civic cars were initially sold through the 2003 model year. The batteries associated with these vehicles are just reaching 10 years of age, so most of the battery waste from the first generation of hybrid vehicles has not yet been created. Two recycling firms that will recycle advanced-technology automotive batteries include North American Operations for Umicore, a Belgium-based metals recycling company, and Toxco, a ~~with~~ U.S. company with a number of facilities located throughout the country.

The NiMH batteries found in hybrid vehicles are basically "zero-landfill" products, meaning that whatever cannot be recycled is typically consumed in the recycling process. The primary metals recovered during recycling are nickel, copper and iron. Some principal rare earth metals, neodymium and lanthanum (Edmunds, 2012), are also recovered. Improper disposal of NiMH batteries poses less environmental hazard than that of lead-acid or nickel-cadmium batteries because of the absence of lead and cadmium, which are considered to be toxic. Most industrial nickel is recycled, due to the relatively easy retrieval of the magnetic element from scrap using electromagnets, and due to its high value.

Li-ion batteries are between 70 and 100 percent recyclable, depending on the particular chemistry of the batteries. There are approximately six different types of Li-ion batteries in use, and more are being developed. The battery types available are differentiated by the chemical formulation of the electrodes including, but not limited to, cobalt dioxide, nickel-cobalt-manganese (NCM), nickel-cobalt- aluminum (NCA), manganese oxide spinel (MnO), and iron phosphate (FePo). The components of Li-ion batteries that cannot be recycled are mostly consumed as fuel in the furnaces that are used to melt down the metals, which include cobalt, copper, iron, nickel, manganese and, in the future, lithium (Edmunds, 2012).

Because Li-ion batteries have a potential for after-automotive use, destructive recycling can be postponed for years even after an EV or hybrid battery can no longer hold and discharge sufficient electricity to power a car's motor, the battery pack can still carry a tremendous amount of energy. Battery manufacturers project that the battery packs will still be able to operate at approximately 80 percent of capacity at the time they must be retired from automotive use. Auto companies are partnering with battery, recycling and electronics firms to figure out and develop post-automotive markets and applications for Li-ion battery packs (Edmunds, 2012).

The switch to electric batteries has the potential to create water quality impacts from improper disposal. However, the increased use of EVs and hybrids will result in a decrease in the use of lead acid batteries, which use sulfuric acid/ blends as electrolytes and have a much shorter lifespan than NiMH or Li-ion batteries. NiMH and Li-ion batteries are generally recycled because the material within the batteries is valuable. Further some manufacturers offer incentives to prevent illegal disposal of the batteries. Toyota offers $200 per battery to help prevent improper disposal of hybrid batteries.

While the switch to electric batteries has the potential to create water quality impacts from improper disposal, increased use of EVs and HVs will result in a concomitant decrease in the use of internal combustion engines and a reduction in the impacts of such engines. For instance, decreased use of internal combustion engines such as gasoline- or diesel-burning engines will also result in a decreased generation of used engine oil since electric motors do not employ oil as a lubricant.

Specifically, approximately 294,500 tons per year of waste oil was generated in the Basin in 2011 and about 525,300 tons was generated in California in 2005 (see Chapter 3.6, Solid/Hazardous Waste). Because of the widespread use and volume of waste oil, a portion of waste oil is illegally disposed of via sewers, waterways, on land, and disposed of in landfills. Waste oil that is illegally disposed can contaminate the environment (via water, land or air). The CIWMB has estimated that about 20 million gallons of used motor oil is disposed each year in an unknown manner (CIWMB, 2007). In addition, a substantial amount of motor oil leaks onto the highways from vehicles each year. This motor oil is washed into storm drains and eventually ends up in the ocean.

Since electric motors do not require motor oil as a lubricant, replacing internal combustion engines with electric engines will eliminate the impacts of motor oil use and disposal. For example, a 50 percent penetration of light-duty electric vehicles will result in a corresponding 50 percent reduction in the release of these contaminants into the environment due to illegal disposal (50 percent of 20 million gallons is 10 million gallons). Release of contaminants due to engine oil that burns up in, or leaks from engines or due to burning of recovered engine oil for energy generation will also be correspondingly reduced. Additional use of electric vehicles is expected to have a beneficial environmental impact by reducing the amount of motor oil used, recycled, potentially illegally disposed, or washed into storm drains and ending up in the ocean.

In conclusion, the illegal disposal of electric batteries has the potential to result in significant water quality impacts by allowing toxic metals or acids to leach into surface or ground waters. However, most car batteries are recycled and EV and hybrid batteries are more valuable than lead-acid batteries, which increases the likelihood that these batteries will also be recycled. For this reason, virtually all of the EV and hybrid batteries will be recycled when compared to lead-acid batteries which do not have a comparable recycling value. Therefore, recycling of EV and hybrid batteries will be greater than for lead-acid batteries used in conventional vehicles, reducing the potential for illegal disposal and potential water quality impacts. Based on the foregoing analysis, less than significant adverse water quality impacts are expected from the increased use of EV and hybrid vehicles.

PROJECT-SPECIFIC MITIGATION – ELECTRIC VEHICLES: Less than significant hydrology/water quality impacts were identified from the increased use of electric vehicles as part of the 2012 AQMP so no mitigation measures are necessary or required.

REMAINING IMPACTS – ELECTRIC VEHICLES: The hydrology and water quality impacts associated with increased use of electric vehicles and hybrid vehicles are expected to be less than significant. Thus, no remaining hydrology or water quality impacts are expected from the projected increased use of these vehicles.

4.5.4.4 Water Demand Impacts

PROJECT-SPECIFIC IMPACT – AIR POLLUTION CONTROL EQUIPMENT: There are several control measures that may require or encourage the use of air pollution control technologies that could result in an increased use of water demand from condensers, carbon absorbers, wet scrubbers, and SCRs. As indicated in Table 4.5-1, the 2012 AQMP includes stationary sources that may require add-on control equipment with the potential to increasing water demand (BCM-03, BCM-04, IND-01, and MSC-01). The use of wet ESPs and WGSs would result in an increase in water demand. The extent of the use of these types of control equipment is unknown. However, the use of wet ESPs and WGSs has been shown to be effective at reducing PM2.5 emissions.

As mentioned earlier in this chapter, one wet ESP and one WGS were installed on the FCCU at the ConocoPhillips Refinery to control sulfur oxide emissions, as well as PM10 and PM2.5 emissions. The environmental analysis for this project indicated that the expected water demand associated with the WGS was about 300 gallon per minute (432,000 gallons per day) (SCAQMD, 2007). The increase in water use is greater than the significance threshold of 262,820 gallons of potable water per day. If the 2012 AQMP control measures were to encourage the development of 20 additional wet ESP/WGS systems of this size, the potential water demand would also exceed the five million gallon total water significance threshold. Therefore, the 2012 AQMP could result in potentially significant water demand impacts associated with wet ESP and WGS technologies.

The possible control methods for BCM-03 - Emission Reductions from Under-fired Charbroilers, have yet to be determined because cost-effective controls for the majority of under-fired charbroilers have not yet been developed. BCM-03 is focused on controlling PM10 and PM2.5 emissions; thus, water scrubbing or filtering devices could be employed as add on controls for charbroiler exhaust and these devices would require water for their operation. An alternative to these water-based control technologies is the replacement of under-fired charbroilers with a smokeless broiler, which would prevent grease from dripping onto hot burner components while cooking food. A smokeless broiler is estimated to result in a 75 percent reduction in PM10 emissions and a 71 percent reduction in VOC emissions. Thus, compliance with BCM-03 could be achieved by replacing older broilers with newer, more efficient broilers, which would not require water to operate.

Other types of control measures may have several control technology options to use for compliance, and these add-on control equipment options are generally not expected to result in a significant increase in water demand from their use. For example, particulate control devices such as baghouses and dry filters do not utilize water. These types of control technologies are likely to be used on smaller emission sources as they tend to be more cost effective than wet ESPs and WGSs.

Control Measure IND-01, a backstop measure for ports, could employ WGSs (which would require water to operate) for particulate control. However, IND-01 is expected to rely primarily on the use of a variety of other control methods that do not require water for operation, including cold ironing, alternative fuels, PM filters, et cetera. While there is a variety of add-on control technologies available, and not all of these technologies require water for their operation, implementation of some of the control measures proposed in the 2012 AQMP is expected to result in significant adverse water demand impacts in the event that wet ESP/WGS systems are installed on large emission sources. Table 4.5-4 contains a summary of the potential water demand associated with implementing Control Measures BCM-03, BCM-04, IND-01, and MSC-01.

PROJECT-SPECIFIC IMPACTS – REFORMULATED PRODUCTS: Historically, potential water demand to reformulate conventional coatings into waterborne coatings and to clean up waterborne coatings has not resulted in significant adverse impacts on water demand. Using "worst-case" assumptions, increase water demand from implementing the 2012 AQMP has been estimated in Table 4.5-4 for both manufacturers of waterborne coatings and water used by consumers to clean coating equipment. As shown in Table 4.5-4, water demand associated with the manufacture and clean-up of waterborne formulations is estimated to be 93,821 gallons per day. This increased water demand does not exceed the SCAQMD's significance thresholds of 5,000,000 gallons per day of total water demand or 262,820 gallons per day of potable water demand.

TABLE 4.5-4

Projected Water Demand from 2012 AQMP Control Measures

CONTROL MEASURE	PROJECTED WATER DEMAND[a] (BILLION GAL PER YEAR)	PROJECTED WATER DEMAND WITH 20% REDUCTION[b] (BILLION GAL PER YEAR)	ESTIMATED COATING SALES[c] (GAL PER YEAR)	PROJECTED MFGR WATER DEMAND, [d] FLOW (GAL PER YEAR)	PROJECTED CLEAN UP WATER DEMAND,[e] (GALLONS PER YEAR)	TOTAL IMPACT,[f] (GALLONS PER DAY)
CTS-01 Architectural Coatings	2,517	2,014	7,610,000	7,610,000	7,610,000	41,698
CTS-02 Misc. Coatings, Adhesives, Solvents, Lubricants	2,517	2,014	3,805,000	3,805,000	3,805,000	20,849
CTS-03 Mold Release Products	2,517	2,014	1,902,500	1,902,500	1,902,500	10,425
CTS-04 Consumer Products	2,517	2,014	3,805,000	3,805,000	3,805,000	20,849
Estimated Total Water Demand from CTS-01, CTS-02, CTS-03, and CTS-04 :			17,122,500	17,122,500	17,122,500	93,821
BCM-03, BCM-04, IND-09, and MSC-01	2,517	2,014	--	--	--	8,640,000[g]
Total Estimated Water Demand:						8,733,821

a See Table 3.5-1.

b On November 10, 2009, the state Legislature passed Senate Bill 7 as part of the Seventh Extraordinary Session referred to as SBX7-7. This new law is the water conservation component to the historic Delta legislative package, and seeks to achieve a 20 percent statewide reduction in urban per capita water use in California by December 31, 2020. The projected water demand was reduce by 20 percent pursuant to this legislation.

c Architectural coatings are the largest coating category. Miscellaneous Coatings, Consumer products and Consumer Products are assumed to be about 50 percent of the volume of architectural coatings, and mold release products are assumed to be about 25 percent of the volume of architectural coatings. (SCAQMD, 2011.)

d Assumes that one gallon of water would be used to manufacture one gallons of coating applied. This estimate includes the water used in humidifiers and for purging lines. This volume also assumes as "worst-case" scenario, that all affected coatings used in the district were manufactured here and does not take into consideration the fact that some affect coatings are already waterborne coatings

e Assumes that one gallon of water would be used to clean-up equipment for every gallon of coating applied.

f Total amount of manufactured and clean-up water demand.

g Assumes 20 large ESPs/WGS are installed as part of the AQMP.

PROJECT-SPECIFIC CONCLUSION – WATER DEMAND: The water demand associated with certain air pollution control technologies along with the water demand associated with the use of waterborne coatings could exceed 262,820 gallons per day of potable water demand and could potentially exceed the total water demand of five million gallons per day and is therefore, potentially significant. The source of water will vary from jurisdiction to jurisdiction but can include additional use of ground water resources. Most of the ground water basins used for water supply are managed to minimize and prevent overdraft conditions. The increased water demand is expected to be associated with existing sources within the Basin which already have water conveyance infrastructure. Therefore, the construction of new water conveyance infrastructure is not expected to be required.

PROJECT-SPECIFIC MITIGATION – WATER DEMAND: The mitigation measures that would be implemented for water demand impacts would depend on the characteristics of individual projects, the volume of water expected to be used, and could vary amongst jurisdictions. Typical mitigation measures are expected to include the following types of measures:

HWQ-1: Local water agencies should continue to evaluate future water demand and establish the necessary supply and infrastructure to meet that demand, as documented in their Urban Water Management Plans.

HWQ-2: Project sponsors should coordinate with the local water provider to ensure that existing or planned water supply and water conveyance facilities are capable of meeting water demand/pressure requirements. In accordance with State Law, a Water Supply Assessment should be required for projects that meet the size requirements specified in the regulations. In coordination with the local water provider, each project sponsor will identify specific on- and off-site improvements needed to ensure that impacts related to water supply and conveyance demand/pressure requirements are addressed prior to issuance of a certificate of occupancy. Water supply and conveyance demand/pressure clearance from the local water provider will be required at the time that a water connection permit application is submitted.

HWQ-3: Project sponsors should implement water conservation measures and use recycled water for appropriate end uses.

HWQ-4: Project sponsors should consult with the local water provider to identify feasible and reasonable measures to reduce water consumptions.

REMAINING IMPACTS – WATER DEMAND: The impacts of the proposed project on water demand are expected to be significant prior to mitigation. While generally the mitigation measures could help minimize some of the water demand, on an individual facility-basis, the availability of water supplies varies throughout the region, thus, not all mitigation measures will be applied in all situations. For this reason, the mitigation measures are not expected to fully eliminate the potential water demand impacts. Therefore, water demand impacts generated by the proposed project are expected to remain significant.

4.5.4.5 Application and Use of Sodium Bisulfate

PROJECT-SPECIFIC IMPACTS – SODIUM BISULFATE: Control Measure BCM-04 would control ammonia emissions from livestock operations through the application of sodium bisulfate (SBS). SBS is a hydroscopic salt that acts an acidifier. SBS has been used to reduce pH levels in dairy bedding (e.g., hay or straw) and manure, which in turn reduces bacterial and ammonia levels. In California, SBS, has also been used by dairies in Tulare, Fresno, Merced, Stanislaus, San Joaquin, Kings, Kern, San Bernardino, Riverside, San Benito and Sacramento, to prevent cow lameness and nuisance flies.

When SBS is applied on manure, research indicates that most ammonia reductions occurred during the first day of SBS application and that ammonia emissions continued to decrease with increasing levels of SBS applications. However, after 24 hours, the reduction rates declined and by day three, the ammonia emissions reduction rates were no longer different between dosages. SBS is most effective in reducing ammonia emissions from dairy corrals at either an application rate of 50 pounds per 1,000 square feet, three times per week; or 75 pounds per 1,000 square feet, two times per week.

While SBS is considered an irritant because of its low pH, it is safe for use in water treatment. In particular, SBS has been used as a disinfectant to prevent damage of the membrane used in reverse osmosis during water treatment. SBS is certified for treating drinking water (e.g., for chlorine removal, corrosion and scale control, and pH adjustment). SBS is used to lower the pH of water for effective chlorination, including water in swimming pools. SBS is also approved as a general use feed additive, including companion animal food. Lastly, SBS is used as a urine acidifier to reduce urinary stones in cats.

SBS is considered Generally Recognized as Safe (GRAS) by the Food and Drug Administration (FDA) and meets their definition of a natural product (FDA, 1998). The FDA has approved of SBS as a food additive and food grade SBS bisulfate is used in a variety of food products, including beverages, dressings, sauces, cake mixes, and fillings. It is also widely used in meat and poultry processing and most recently in browning prevention of fresh cut produce.

Because SBS is a salt, the amount of SBS that is applied needs to be reviewed and controlled to prevent SBS contamination of water runoff that could result in water quality impacts and reduced pH levels. SBS use should be carefully considered in areas that are sensitive to salts and/or in areas with existing high salt loading in the soils. Because SBS loses its effectiveness over time, controlled and monitored application rates of SBS are needed to minimize the potential for water runoff and related water quality impacts.

PROJECT-SPECIFIC MITIGATION – SODIUM BISULFATE: Less than significant hydrology/water quality impacts were identified for the potential use of SBS as part of the 2012 AQMP so no mitigation measures are necessary or required.

REMAINING IMPACTS – SODIUM BISULFATE: The hydrology and water quality impacts associated with increased use of SBS are expected to be less than significant. Thus, no remaining hydrology or water quality impacts are expected from the projected increased use of this chemical.

4.5.4.6 Water Quality Impacts Associated with Increased Ammonia Storage

PROJECT-SPECIFIC IMPACTS – AMMONIA STORAGE: As discussed in Subchapter 4.4 – Hazards and Hazardous Materials, a spill of any hazardous materials including ammonia, could occur under upset conditions. Construction of the vessels and foundations in accordance with California Building Code requirements helps structures resist major earthquakes without collapse, but may result in some structural and non-structural damage following a major earthquake. As required by U.S. EPA's spill prevention control and countermeasure regulations, all affected facilities are currently required to have emergency spill containment equipment and would implement spill control measures in the event of an earthquake. Storage tanks typically have secondary containment such as a berm, which would be capable of containing 110 percent of the contents of the storage tanks. Therefore, should a rupture occur, the contents of the tank would be collected within the containment system and pumped to an appropriate storage tank.

Spills at affected industrial or commercial facilities would be collected within containment structures. Large spills outside of containment areas at affected facilities could occur when transferring the material from a transport truck to a storage tank; these spills are expected to be captured by the process water system where they could be collected and controlled. Spilled material would be collected and pumped to an appropriate tank or sent off-site if the materials cannot be used on-site.

PROJECT-SPECIFIC MITIGATION – AMMONIA STORAGE: Because of the state- and federally-mandated containment system design, spills are not expected to migrate from the facility in a way that would create significant adverse water quality impacts. Since less than significant hydrology/water quality impacts were identified for the potential storage of ammonia, no mitigation measures are necessary or required.

REMAINING IMPACTS – AMMONIA STORAGE: The hydrology and water quality impacts associated with ammonia storage are expected to be less than significant. Thus, no remaining hydrology or water quality impacts are expected from the projected increased storage of this chemical.

4.5.5 Summary of Hydrology and Water Quality Impacts

The following is the summary of the conclusions of the analysis of energy impacts associated with implementation of the 2012 AQMP.

- Wastewater treatment facilities are expected to have sufficient capacity to handle the estimated increase in wastewater that could be generated from reformulation of products and use of air pollution control equipment (e.g., wet ESPs and WGSs). Therefore, less than significant impacts associated with wastewater treatment or water quality is expected.
- The use of alternative fuels is not expected to result in greater adverse water quality impacts than the use of conventional fuels. Less than significant adverse hydrology and water quality impacts are expected from the increased use of alternative fuels.
- It is not expected that the recycling of EV and hybrid batteries would be greater than lead-acid batteries in conventional vehicles because although EV and hybrid batteries are typically larger than lead acid batteries, they typically have a much longer lifetime. As a result, potential illegal disposal and potential water quality impacts would be equivalent to, or possibly less for EV and hybrid batteries compared to lead-acid batteries. Therefore, less than significant adverse water quality impacts are expected from the increased use of EV and hybrid vehicles.
- Water demand associated with the manufacture and use of waterborne coatings, solvents, and other consumer products, and add-on air pollution control technologies such as wet ESPs and WGSs are potentially significant. While mitigation measures as available, they can vary from jurisdiction to jurisdiction, but it is expected that impacts would remain significant even after mitigation measures are implemented.
- The use and application of SBS should be controlled and monitored to prevent water quality runoff and related water quality impacts. Therefore, the use of SBS is expected to create less than significant water quality impacts.
- Potential spills associated with ammonia are expected to be contained on-site due to the requirement for secondary spill containment devices and berms. Therefore, potential ammonia spills that may affect water quality are expected to be less than significant.
- Summary of PM2.5 Control Measure Impacts: The hydrology and water quality impacts associated with PM2.5 Control Measures are potentially significant for water demand (BCM-03, IND-01, and MCS-01). The hydrology and water quality impacts associated with wastewater generation and related wastewater quality are less than significant. Further, the use and application of SBS (BCM-04) on water quality is also expected to be less than significant.

Summary of Ozone Control Measure Impacts: The hydrology and water quality impacts associated with Ozone Control Measures are potentially significant for water demand (CTS-01, CTS-02, CTS-03, CTS-04, and FUG-01). The water quality impacts associated with wastewater generation and related wastewater quality from 2012 AQMP Control Measures (CTS-01, CTS-02, CTS-03, CTS-04, and FUG-01) are less than significant. Less than significant adverse hydrology and water quality impacts are expected from the increased use of alternative fuels (IND-01, MSC-01, ONRD-01, ONRD-02, ONRD-03, ONRD-04, ONRD-05, OFFRD-01, OFFRD-02, OFFRD-03, OFFRD-04, ADV-01, ADV-02, ADV-03, ADV-04, ADV-05, ADV-06, and ADV-07). Similarly, less than significant adverse water quality impacts associated with increase battery use in EV and hybrid vehicles are expected (ONRD-01, ONRD-03, ONRD-04, ONRD-05, ADV-01, ADV-02, ADV-03, ADV-04, ADV-06, and ADV-07). Potential spills associated with ammonia are expected to be contained on-site due to the requirement for secondary spill containment devices and berms. Therefore, potential ammonia spills are expected to be less than significant.