BOARD MEETING DATE: October 6, 2017 AGENDA NO. 9

PROPOSAL: Recognize Revenue, Transfer and Appropriate Funds, Purchase Equipment, Execute Contracts and Issue Purchase Orders to Address Operational Needs for Metals Monitoring and Analysis

SYNOPSIS: The elevated levels of hexavalent chromium (Cr6+) that have recently been measured in the cities of Paramount and Compton have created an urgent need to further enhance SCAQMD's air quality monitoring and laboratory analysis capability as part of the community air toxics initiative. This action is to invest in new laboratory and field equipment, demonstrate the capability of advanced technology for measuring toxic metals (including Cr6+) in near real-time, study the mechanisms that lead to Cr6+ production from heat treating furnaces, and issue purchase orders for compressed gases and cryogenic liquids for a wide variety of analytical and monitoring needs. This will allow SCAQMD to appropriately address the increasing demand for monitoring of Cr6+ and other toxic pollutants, and to develop more efficient monitoring approaches to detect Cr6+ emissions from potential sources.

COMMITTEE: Stationary Source; September 15, 2017; Less than a quorum was present; the Committee Members concurred that this item be approved by the Board.

RECOMMENDED ACTIONS:

1. Transfer and appropriate up to $150,000 to Science & Technology Advancement's FY 2017-18 and/or 2018-19 Budget, Services and Supplies Major Object, Small Tools, Instruments, Equipment Account from the BP ARCO Settlement Projects Fund (46) for up to 33 integrated filter-based samplers (Table 1).
2. Recognize revenue, upon receipt, and appropriate up to $75,000 in U.S. EPA Section 105 funding into Science & Technology Advancement's FY 2017-18 Budget, Capital Outlays Major Object and Services and Supplies Major Object, Maintenance of Equipment account to fund the purchase of a Thermo ICS-5000 Ion Chromatograph with service contract (Table 1).

3. Authorize the Procurement Manager, in accordance with SCAQMD Procurement Policy and Procedure, to issue purchase orders in an amount not to exceed $225,000 for laboratory and field equipment (Table 1).
4. Authorize the Chairman to execute the following contracts from the BP ARCO Settlement Projects Fund (46) to demonstrate the capabilities of advanced technology for measuring toxic metals (including Cr6+) in near real-time, and to study the mechanisms that lead to Cr6+ production from heat treating furnaces (Table 2):
   a) Aerodyne Research, Inc., in an amount not to exceed $240,000 to conduct continuous mobile measurements of air toxic metals and other air pollutants in the cities of Paramount and Compton, and in other parts of the Basin; and
   b) Desert Research Institute in an amount not to exceed $190,000 to work in collaboration with Aerodyne and conduct continuous mobile measurements of Cr6+ in Paramount, Compton, and other parts of the Basin; and
   c) UC Riverside's Center for Environmental Research & Technology in an amount not to exceed $174,000 to study the mechanisms that lead to Cr6+ production from heat treating furnaces.
5. Issue purchase orders with the qualified vendors identified in the attachment for the purchase of compressed gases and cryogenic liquids, based upon the best overall cost package per gas, at fixed rates which shall be effective for FY 2017-18, for a cumulative amount not to exceed $200,000 from Science and Technology Advancement's FY 2017-18 Budget.

Wayne Nastri
Executive Officer

MMM:JCL:AP:AK

Background

In October 2016, SCAQMD staff deployed several monitors in the industrial areas of Paramount as part of its ongoing investigation to identify potential sources of hexavalent chromium (Cr6+) that may present health risks to communities in this city. Since initial results showed elevated levels of Cr6+ near two metal processing facilities, stipulated Orders for Abatement were issued for Aerocraft Heat Treating Co. Inc. (December 2016) and Anaplex Corp. (January 2017) to reduce Cr6+ emissions from their operations. Since then, staff has been expanding its monitoring and analysis activities to identify other industrial facilities that may be responsible for elevated levels of Cr6+ and other toxic metals in Paramount. In addition, SCAQMD started its community air toxics initiative in June 2017 by conducting air monitoring near several metal processing facilities in Compton to assess levels of Cr6+. The Compton area has several potential chrome-emitting facilities in close proximity to each other and to schools, homes, various businesses and other sensitive receptors such as hospitals and

senior centers. As of September, the SCAQMD has deployed over 20 portable samplers in the cities of Paramount and Compton for assessing Cr6+ levels from a number of metal processing facilities.

Developing more efficient monitoring approaches to rapidly detect Cr6+ emissions from potential sources is critical to satisfy the increasing demand for more extensive and ongoing monitoring of Cr6+ and other toxic metals in Paramount, Compton, and other parts of the Basin.

Currently, staff uses Ion Chromatography for measuring Cr6+ and Inductively Coupled Plasma - Mass Spectrometry for other air toxic metals. These methods allow for an accurate determination of Cr6+ and toxic metal levels in ambient air but are very labor and resource intensive and require the deployment of multiple fixed samplers, the collection of integrated samples over a 24-hour period, and a complex analytical procedure for preparing the filters prior to deployment. Consequently, while this monitoring and analysis strategy is ideal for surveying purposes near a few facilities, it is not effective for wide spread community surveys in a short period of time. Conducting such surveys using filter sampling would be labor-intensive and time-consuming, and allows for neither continuous monitoring nor dense spatial coverage. Therefore, there is a pressing need to develop an alternative approach to screening for Cr6+. Recent advancements in real-time analytical techniques offer promise. Aerodyne Research, Inc. (Aerodyne) and the Desert Research Institute (DRI) have developed a unique approach for measuring air toxic metals in urban environments and identifying Cr6+ emissions from industrial facilities and other potential sources in near real-time. Thus, staff is interested in conducting a pilot study in the Paramount and Compton areas to demonstrate the capabilities of the Aerodyne and DRI technology.

Staff has identified plating, forging, and heat treating facilities as significant contributors of Cr6+ emissions. Furnaces used by heat treating facilities are of particular concern because there are a large number of units with a high degree of variability in Cr6+ emissions present in Paramount as indicated by the source test results received to date. The University of California – Riverside's Bourns College of Engineering Center for Environmental Research & Technology CE-CERT group is uniquely qualified because of their experience and capabilities to conduct research.

In June 2017 the Board approved the release of RFQ #Q2017-13 to competitively solicit bids for the purchase of compressed gases and cryogenic liquids for a wide variety of analytical and monitoring needs. Five bids for compressed gases and cryogenic liquids were received and evaluated. The SCAQMD Laboratory uses compressed gases as carrier gases, diluent, and purging agents. Cryogenic liquids are used to concentrate samples for gas chromatographic analysis for programs such as PAMS, NATTS, compliance, special studies and other network samples.

Proposal
These actions are to transfer and appropriate up to $150,000 to Science & Technology Advancement's FY 2017-18 and/or 2018-19 Budget from the BP ARCO Settlement Projects Fund (46); recognize revenue upon receipt and appropriate $75,000 to Science & Technology Advancement's FY 2017-18 Budget from the U.S. EPA Section 105 grant; execute contracts; and issue purchase orders as described herein and below, and summarized in the attached Tables.

Proposed Purchases through Sole Source Purchase Orders

Integrated Filter-Based Samplers
Staff currently operates enough integrated samplers to support the collection of particulate samples for various high-profile monitoring projects such as Hixson Metal Finishing (Newport Beach), Paramount, and Compton. Field activities in Paramount have now expanded to encompass a larger portion of the city and provide more comprehensive and ongoing monitoring of the industrial facilities in this area. Field activities in Compton are also expanding and will soon include periodic emission monitoring of up to eight facilities in the area. Additional samplers are needed to keep pace with the increasing demand for more extensive metal monitoring in Paramount and Compton and the projected expansion of current monitoring and analysis activities in other parts of the Basin. The Procurement Manager will issue a purchase order not to exceed $150,000 for up to 33 integrated filter-based samplers (Table 1).

Ion Chromatograph (Thermo ICS-5000)
The large number of Cr6+ samples being collected in the cities of Paramount and Compton, along with the projected expansion of current monitoring and analysis activities, exceed the throughput of the three existing Ion Chromatographs (IC) in the SCAQMD laboratory. As these instruments are also being used to analyze samples for other special monitoring and U.S. EPA projects, it is critical that the SCAQMD acquires an additional IC instrument to provide adequate coverage for present and future needs. This action is to recognize revenue, upon receipt, and appropriate up to $75,000 in U.S. EPA Section 105 funding for the purchase of a Thermo ICS-5000 IC instrument with service contract (Table 1).

Proposed Contracts

Aerodyne Research, Inc. and Desert Research Institute Study
Aerodyne and DRI will conduct continuous mobile measurements of Cr6+ and other toxic pollutants in Paramount, Compton, and other parts of the Basin for at least a month. This survey will include systematic sampling along carefully designed routes to map toxic metals concentrations around metal facilities and in surrounding communities. Each city will be investigated for at least a one-week period. All measurement instrumentation will be deployed aboard Aerodyne's Mobile Laboratory

(AML). The detection of Cr6+ will be accomplished by DRI's stream-jet aerosol collector and long pathlength absorbance spectrometer. This system operates at a 10-minute time resolution. Aerodyne's long-time-of-flight laser vaporization aerosol mass spectrometers (1 Hz time resolution) will be able to measure other air toxic metals. Additional instrumentation will be used aboard the AML to identify benzene, toluene, ethyl benzene, xylenes, formaldehyde, nitrogen oxides, ozone, and other pollutants. This action is to authorize the Chairman to execute a contract with Aerodyne in an amount not to exceed $240,000 and a contract with DRI in an amount not to exceed $190,000 to demonstrate the capabilities of advanced technology for measuring Cr6+ and other toxic pollutants in near real-time.

UC Riverside's Center for Environmental Research & Technology (CE-CERT)
Several mechanisms may be causing increased production of Cr6+ at heat-treating furnaces. These include: conversion of chromium by heat in the furnace insulating refractory materials, conversion of stainless steel type chromium-containing materials used in the construction of the furnaces, conversion of stainless steel type chromium containing-parts and parts racks placed in the furnaces, conversion in the accumulated metal and refractory dust on the furnace floors, conversion of airborne chromium laden dusts in the facility pulled into the furnaces, and exacerbation of the conversion dependent on oxygen or other combustion conditions in the furnaces. The relative impact of each mechanism to the overall Cr6+ emissions is not yet fully understood. This action is to authorize the Chairman to execute a contract with CE-CERT in an amount not to exceed $174,000 to fully characterize and quantify the specific mechanisms that lead to Cr6+ production from forging and heat treating furnaces.

Proposed Purchases through Competitive Solicitation Process

Staff requests Board approval for the issuance of purchase orders with a cumulative amount not to exceed $200,000 for the purchase of compressed gases and cryogenic liquids. Orders will be placed with the qualified vendor having the best cost package quotation per product while meeting the delivery requirements specified in the RFQ. Purchase order amounts will be decided based upon the overall cost and the historical consumption of the various gases and cryogenic liquids.

Sole Source Justification
Section VIII, B.2 of the Procurement Policy and Procedure identifies four major provisions under which a sole source award may be justified for procurement. The request for sole source purchase of the Integrated Filter-Based Samplers is made under Sections B.2.b and B.2.c of the Procurement Policy and Procedure. Delay of the purchases for the integrated filter-based samplers could potentially endanger public health or property and the systems utilize proprietary technology. The request for sole source purchase for the proposed contracts with Aerodyne and DRI are also made under Sections B.2.b and B.2.c. Public health or property may be endangered by delay; the

unique experience and capabilities of the proposed contractor or contractor team; and the contractor has ownership of key assets required for project performance. Lastly, the request for sole source purchase for the proposed contract with CE-CERT is made under Sections B.2.c and B.2.d. These are research and development efforts with educational institutions or nonprofit organizations, and the unique experience and capabilities of the proposed contractor or contractor team.

Section VIII, B.3 of the Procurement Policy and Procedure identifies four major provisions under which a sole source award may be justified for federally funded procurement. The requests for sole source purchase of a Thermo ICS-5000 IC is made under Section B.3.b of the Procurement Policy and Procedure. The public exigency or emergency for the requirement will not permit a delay resulting from competitive solicitation. The expedited purchase of an additional Thermo ICS-5000 IC unit is critical to guarantee that all Cr6+ samples being collected in Paramount and Compton will be analyzed in a timely manner.

Outreach
In accordance with SCAQMD's Procurement Policy and Procedure, a public notice advertising the RFQ and inviting bids was published in the Los Angeles Times, the Orange County Register, the San Bernardino Sun, and Riverside County's Press Enterprise newspapers to leverage the most cost-effective method of outreach to the South Coast Basin. Additionally, potential bidders may have been notified utilizing SCAQMD's own electronic listing of certified minority vendors. Notice of the RFQ has been emailed to the Black and Latino Legislative Caucuses and various minority chambers of commerce and business associations, and placed on the Internet at SCAQMD's website (**http://www.aqmd.gov**).

Bid Evaluation
The evaluation panel for compressed gases and cryogenic liquids consisted of three SCAQMD staff: one Principal Air Quality Chemist and two Senior Air Quality Chemists. The panel breakdown was as follows: one Hispanic, two Caucasian; three males. The evaluation process was conducted to qualify vendors according to the criteria described in the RFQ. The panel determined that all five bidders met specifications for one or more gas or cryogenic fluid products and satisfied delivery requirements. The overall best cost package for compressed gases is offered by Westair, followed by Airgas, and Praxair. The overall best cost package for cryogenic liquids is offered by Airgas, followed by Gilmore, and Praxair. Future acquisition of specific gases and cryogenic liquids will be based on the cost package submitted by the qualified vendors. The cost package includes cost of gases or cryogenic liquids (product), demurrage/rental, delivery and pick up costs, fuel fees, and hazmat fees.

The attachment reflects the price quotations of vendors from whom compressed gases and cryogenic liquids will be purchased. In the event a vendor cannot supply gas or cryogenic products satisfying delivery requirements, or where a vendor has repeated quality failures, products will be purchased from the vendor with the next-best cost package.

Benefits to SCAQMD

The purchase of new laboratory and field equipment, the successful demonstration of the capabilities of the Aerodyne and DRI instruments, and a full characterization of the mechanisms that lead to Cr6+ production from heat treating furnaces will allow staff to appropriately address the increasing demand for more extensive monitoring of ambient Cr6+ and other toxic metals in the cities of Paramount and Compton and other parts of the Basin, as well as greatly enhance the capability of the Monitoring and Analysis Division to respond quickly to current and future air monitoring requests.

Resource Impacts

BP ARCO Settlement Projects Fund (46) and U.S. EPA Section 105 funding will be used to fund the proposed purchases listed in Table 1. The BP ARCO Settlement Projects Fund (46) will be used to fund the contracts listed in Table 2. These expenses will not exceed $829,000, of which $754,000 will be funded by the BP ARCO Settlement Projects Fund (46) and $75,000 from U.S. EPA Section 105 funding. The BP ARCO Settlement Projects Fund (46) as of July 2017 has a balance of $12,624,255 excluding any Board actions that have not been encumbered. Any unused funds will be returned to the BP ARCO Settlement Projects Fund (46). The term of the purchase orders for gases and cryogenic liquids is for FY 2017-18. Staff estimates that $200,000 will be needed for the purchase of compressed gases and cryogenic liquids in FY 2017-18. Sufficient funds are available in the Science and Technology Advancement's FY 2017-18 Budget.

Attachment

Comparison of Compressed and Cryogenic Gas Vendor Bids for FY 2017-18
RFQ #Q2017-13

Table 1
Proposed Purchases through Sole Source Purchase Orders

Fiscal Year	Description	Funding Source	Action	Estimated Cost
FY 2017-18 and/or FY 2018-19	Integrated filter-based samplers (up to 33 units)	BP ARCO Settlement Projects Fund (46)	Transfer and Appropriate	$150,000
FY 2017-18	Ion Chromatograph with service contract (quantity one)	U.S. EPA Section 105 Grant	Appropriate	$75,000
	Total			**$225,000**

Table 2
Proposed Contracts
Funding Source: BP ARCO Settlement Projects Fund (46)

Contractor	Description	Estimated Cost
Aerodyne Research, Inc.	Conduct continuous mobile measurements of air toxic metals and other air pollutants	$240,000
Desert Research Institute	Conduct continuous mobile measurements of Cr6+	$190,000
UCR Center for Environmental Research & Technology	Study Cr6+ production and emissions from heat treating furnaces	$174,000
Total		**$604,000**

Comparison of Compressed and Cryogenic Gas Vendor Bids for FY 2017-18
RFQ #Q2017-13

	Airgas Projected Cost (FY 2017-18)	**Gilmore** Projected Cost (FY 2017-18)	**Matheson** Projected Cost (FY 2017-18)	**Praxair** Projected Cost (FY 2017-18)	**Westair** Projected Cost (FY 2017-18)
Pure Gases					
Total (assuming FY16-17 cylinder order)	$30,696.00	$32,646.00 *incomplete bid*	$17,670.00 *incomplete bid*	$32,326.05	$27,071.00
Cryogenic Liquids					
Total (assuming FY16-17 dewar order)	$30,292.20	$39,285.00	$51,025.00	$39,417.50	$40,450.00
Demurrage/rental and other charges					
Cylinder Demurrage Total per year (based on 100 cylinder balance)	- *flat rate for cryo + gas	$9,000.00	$6,204.00	$9,600.00	$6,120.00
Cryo Demurrage Total per year (based on 30 dewar balance)	$6,000.00	$10,800.00	$13,950.00	$10,800.00	$9,720.00
Gas + Demurrage	$36,696.00			$41,926.05	$33,191.00
Cryo + Demurrage	$36,292.20	$50,085.00	$64,975.00	$50,217.50	$50,170.00
Additional Points (business status certifications)	0%	0%	0%	0%	9%