California Regional Water Quality Control Board
Los Angeles Region

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Linda S. Adams
Acting Secretary for
Environmental Protection

Edmund G. Brown Jr.
Governor

April 19, 2011

Mas Dojiri, Ph.D., Division Manager
Environmental Monitoring Division, Bureau of Sanitation
City of Los Angeles Department of Public Works
Hyperion Treatment Plant
Harry Pregerson Bldg. 5TH Floor
12000 Vista Del Mar
Playa Del Rey, CA 90293

Dear Dr. Dojiri:

ADOPTED RESOLUTION NO. R11-004 APPROVING SPECIAL STUDIES – HYPERION TREATMENT PLANT (NPDES NO. CA0109991, CI-1492) AND TERMINAL ISLAND TREATMENT PLANT (NPDES NO. CA0053856, CI-2171)

Pursuant to Division 7 of the California Water Code, this Regional Water Board approved Resolution No. R11-004 at a public hearing on April 14, 2011. The complete final resolution will be sent only to the City of Los Angeles. However, the document is available for public review on the on the Regional Water Board's website: www.waterboards.ca.gov/losangeles/.

Please submit all reports to the Regional Water Board, Attn: Information Technology Unit. When submitting monitoring reports, technical reports, or any correspondence regarding this resolution, please include a reference to our compliance file numbers CI-1492 and CI-2171 to assure that the reports are directed to appropriate staff. Please do not combine your required reports with any other reports. Instead, submit each type of report as a separate document.

Should you have any questions, please contact the undersigned at (213) 576-6664.

Sincerely,

Brandi Outwin-Beals, P.E.
Unit Chief, Municipal Permitting Unit

Enclosure

State of California
California Regional Water Quality Control Board, Los Angeles Region

RESOLUTION NO. R11-004
Approving the City of Los Angeles' Proposed Special Studies for
Hyperion Treatment Plant and Terminal Island Water Reclamation Plant

WHEREAS, the California Regional Water Quality Control Board, Los Angeles Region (hereinafter Regional Water Board), finds that:

1. The Regional Water Board adopted National Pollutant Discharge Elimination System (NPDES) permits for the City of Los Angeles' Hyperion Treatment Plant on November 2, 2010, and for the Terminal Island Water Reclamation Plant on May 6, 2010.

2. Both NPDES permits contain a requirement for the City of Los Angeles to consult annually with the Regional Water Board and the United States Environmental Protection Agency (USEPA) to determine the need for Special Studies. Detailed scopes of work for proposals shall be presented to obtain Regional Water Board and USEPA approval and to inform the public. Special Studies are intended to focus on refined questions regarding specific effects or development of monitoring techniques. Questions regarding effluent or receiving water quality, discharge impacts, ocean processes in the area of the discharge, or development of techniques for monitoring the same, arising out of the results of core or regional monitoring, may be pursued through these Special Studies.

3. On December 20, 2010, the City of Los Angeles submitted three proposed Special Studies for 2011: 1) Determination and Mitigation of the Impact of Holding Time on Dissolved Sulfide Concentrations in Industrial Waste Samples (Hyperion Treatment Plant and Terminal Island Water Reclamation Plant); 2) Characterization of Constituents of Emerging Concern (CECs) in Los Angeles Harbor near the Terminal Island Water Reclamation Plant Outfall and Santa Monica Bay Near the Hyperion Treatment Plant Outfall (Hyperion Treatment Plant and Terminal Island Water Reclamation Plant); and 3) Special Monitoring Program during the Proposed Repair of the 5-mile Outfall (Hyperion Treatment Plant).

4. Regional Water Board staff believe that these proposed Special Studies fulfill the requirements of the NPDES permits, will further the Regional Water Board's knowledge of the health of Los Angeles Harbor and Santa Monica Bay and of emerging issues associated with the discharges from the plants, and recommend that they be approved by the Regional Water Board.

THEREFORE, BE IT RESOLVED THAT:

1. The Regional Water Board believes that the three Special Studies proposed for 2011: 1) Determination and Mitigation of the Impact of Holding Time on Dissolved Sulfide Concentrations in Industrial Waste Samples (Hyperion Treatment Plant and Terminal Island Water Reclamation Plant); 2) Characterization of Constituents of Emerging Concern (CECs) in Los Angeles Harbor near the Terminal Island Water Reclamation Plant Outfall and Santa Monica Bay Near the Hyperion Treatment Plant Outfall (Hyperion Treatment Plant and Terminal Island Water Reclamation Plant); and 3) Special Monitoring Program during the Proposed Repair of the 5-mile Outfall (Hyperion Treatment Plant), merit approval.

2. The Regional Water Board hereby approves the City of Los Angeles' three proposals for the Special Studies.

I, Samuel Unger, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, Los Angeles Region, on April 14, 2011.

Samuel Unger

Samuel Unger, P.E.
Executive Officer

City of Los Angeles
Bureau of Sanitation
Hyperion Treatment Plant and Terminal Island Water Reclamation Plant

Special Study Proposal
(October 1, 2010 to December 31, 2011)
Determination and Mitigation of the Impact of Holding Time on Dissolved Sulfide Concentrations in Industrial Waste Samples - Hyperion Treatment Plant and Terminal Island Water Reclamation Plant

Introduction:

The Environmental Compliance Inspectors from IWMD routinely collect various samples required by the Pretreatment Programs of the Hyperion Treatment Plant (HTP), Los Angeles-Glendale Water Reclamation Plant, Donald C. Tillman Water Reclamation Plant, and the Terminal Island Water Reclamation Plant NPDES permits. These samples are delivered to the BOS, Environmental Monitoring Division (EMD) laboratories at HTP for analysis. In some cases, the industrial dischargers will split samples with the IWMD Inspectors. Comparison of the dissolved sulfide results generated by EMD and the laboratories employed by the industrial dischargers shows an intermittent, but on-going trend that the EMD dissolved sulfide results are greater than those generated by the laboratories employed by the industrial dischargers. It is well documented that under anoxic conditions, sulfate ions (SO_4^{2-}) are reduced to sulfide ions (S^{2-}). The overarching purpose of this study is to determine if reduction of sulfate to sulfide is behind the discrepancy in data described above and, if so, develop and employ a mitigation strategy.

Objectives:

The objectives of this special study are as follows: 1) to determine if there are increases in the dissolved sulfide concentration of industrial waste samples during the time between sample collection and analysis; 2) if appropriate, develop strategies to mitigate generation of dissolved sulfides in sample containers during transport; and 3) to determine whether any of the commercially available dissolved sulfide test kits provide sensitivity, precision, and accuracy that are comparable with the ELAP-approved laboratory method.

Benefits:

The positive outcome of the study will satisfy the industrial users that EMD uses a dissolved sulfide test method which does not cause high dissolved sulfide results due to sample holding time.

Approach:

1. During the **first quarter**, the EMD Wet Chemistry Unit will research the existing test kit methods for dissolved sulfide analysis. We will determine which test kits are the most suitable for our study and purchase them.

2. During the **second qua**rter, we will investigate the performance of each test kit relative to our laboratory test method with regards to its accuracy, precision, method detection limit, its working range, interferences, and so forth. We will do a parallel study based on known standards as well as field samples from one or more of the HTP influent sewers.

3. During the **third quarter**, if a suitable test kit method is found, we will use it to investigate the effect of holding time on dissolved sulfide. We will collect Hyperion influent samples and do a test immediately (using both the test kit method and the laboratory test method) and after a specific holding time.

   In case test kit method does not meet the quality control criteria such as accuracy, precision, and method detection limit, we will not be using the test kit method for studying holding time impact on dissolved sulfides. Consequently, we will follow the above procedure using the laboratory test method only.

4. During the **fourth quarter**, depending upon the second and the third quarter results, we will collaborate with IWMD inspectors in doing a parallel study to determine the effect of sample holding time on dissolved sulfide concentrations in industrial waste samples. If the test kit method is suitable, we will test the first set of sample using the test kit method in the field. And then, after the second set of sample (which has not been treated aside from sodium hydroxide (NaOH) preservation) is brought back to the lab, we will test it in the lab (after a few hours) using only the test kit method.

   If the test kit method **was not** suitable in Item 3, we will not be using the test kit method further. If our results show that the dissolved sulfides are being produced during transport, we will mitigate dissolved sulfide generation by pre-treatment of the first set of samples in the field. Then, after the second set of samples (which has not been treated aside from NaOH preservation) is brought into the lab, we will pre-treat it. And then, both sets (treated in the field and treated in the lab) will be tested at the same time.

Project Duration:

This special study was initiated beginning October 1, 2010, and is expected that it will be completed in about one year (October 2010 to September 2011).

Deliverables:

Three quarterly progress reports and a final report of the findings will be submitted to the LA RWQCB.

Collaborators:

EMD (Wet Chemistry Unit) and IWMD

City of Los Angeles
Bureau of Sanitation
Terminal Island Water Reclamation Plant (TIWRP)
Hyperion Treatment Plant (HTP)

Proposed Special Study:
Characterizing constituents of emerging concern (CECs) in Los Angeles Harbor near the TIWRP outfall and Santa Monica Bay near the HTP outfall: a continuation and expansion of the 2010 TIWRP Special Study

Keith Maruya
Southern California Coastal Water Research Project (SCCWRP)

Curtis Cash
Environmental Monitoring Division, Bureau of Sanitation, City of Los Angeles (CLAEMD)

Introduction:

This proposed Special Study is a continuation and expansion of the approved 2010 TIWRP Special Study, "Characterizing constituents of emerging concern (CECs) in Los Angeles Harbor near the TIWRP outfall." Due to logistical challenges and unknown circumstances, various sampling devices were not recovered from various stations and depths within our sampling array (Table 1) during the 2010 TIWRP Special Study (see 3rd quarter progress report for a detailed explanation). We propose to mirror that Special Study methodology in 2011 and take advantage of a concurrent opportunity to leverage research funds from related projects, with improvements in deployment techniques in an attempt to reduce the potential sampling device loss, and apply it to both TIWRP and HTP outfall study areas.

Constituents of emerging concern (CECs) represent a challenge for managers because of the limited scientific knowledge about their sources, fates, and effects. Recent studies have shown that certain pharmaceuticals and chemicals found in common commercial and household products occur in aquatic environments. As a result, efforts are being carried out to summarize the state of knowledge on the discharge, occurrence, and potential impacts of CECs, and to recommend a monitoring and protection strategy for California's coastal and marine systems. Several questions remain to be answered: what are the relative contributions of treated wastewater and stormwater for CECs discharged to the ocean?; what CECs are most appropriate for monitoring?; what are the best monitoring methods?; and what CECs have the potential to bioaccumulate in coastal and marine ecosystems?

To characterize the spatial extent and temporal trends in contaminant levels, NOAA's

Mussel Watch (MW) Program has collected and analyzed native bivalves from around the U.S. since 1986 (http://ccma.nos.noaa.gov/stressors/pollution/nsandt.). After more than 20 years, a downward trend in levels of legacy organic contaminants (PCBs, DDTs and chlordanes) is apparent nationwide while levels of trace metals and PAHs appear to be stable. Because production of the legacy organics has long since ceased, coastal resource managers see little value in continuing with the current MW effort. In response, MW has re-dedicated itself to serving as an early warning sentinel for CECs nationwide.

In 2009, NOAA partnered with regional, state, and federal collaborators to design and carry out a pilot study on CECs in California coastal waters. The pilot study's technical steering committee identified treated wastewaster discharge as one of the key potential sources to be characterized for CECs, using both conventional and passive water sampling techniques. In response, the City of Los Angeles and SCCWRP proposed the inclusion of Hyperion and TIWRP outfalls as sites for this pilot study. The original plan for these sites was to compare the occurrence of CECs as measured by several passive sampling devices (PSDs) with the accumulation of the same CECs by caged bivalves. Previous research has shown that sessile sentinel organisms such as bivalves can integrate contamination associated with fixed water column stations, whereas mobile species such as fish show no such relationship. Dozens of pharmaceuticals, personal care products, current use pesticides, and commercial/industrial chemicals were targeted for this purpose, and in the CA pilot study in general. A second study supported by USC Sea Grant with similar goals is currently underway at SCCWRP. PSDs will be calibrated for a select list of non-polar CECs (representing classes of flame retardants, pesticides, and DDT breakdown products) and their measurement in coastal receiving waters compared with bivalve tissue residues.

This study will expand the current MW list of analytes to include high priority, non-polar CECs and improve the MW program by the addition of alternative sampling methods (e.g., PSDs) and sampling sites (i.e., adjacent to and/or near municipal outfalls). This study also will take advantage of concurrent projects that will pre-calibrate PSDs for the target non-polar CECs of interest and that will provide leverage funding to support the preparation of caged bivalves for field deployment and ultimate comparison between PSD and mussel tissue measurements.

Table 1. Recovery of passive sampler arrays and caged mussels during the 2010 TIWRP Special Study.

Station - depth	PED	POCIS	SPME	MUSSELS
HW33 - surface	NR	NR	NR	NR
HW33 - bottom	NR	NR	NR	NR
HW54 - surface	LD	LD	In progress	LD
HW54 - bottom	In progress	In progress	In progress	NR
HW65 - surface	In progress	NR	In progress	NR
HW65 - bottom	In progress	In progress	In progress	In progress

NR – not recovered; LD – lost during deployment
PED – polyethylene device
POCIS – polar organic chemical integrated sampler
SPME – solid phase microextraction

Objectives:

The goal of this study is to investigate the occurrence of high priority, non-polar CECs in receiving waters using passive sampling devices (PSDs) and caged bivalves placed in the vicinity of the Terminal Island Water Reclamation Plant (TIWRP) outfall in the Los Angeles Outer Harbor and the Hyperion Treatment Plant (HTP) outfall in Santa Monica Bay.

Benefits:

This study will inform the scientific, regulatory, and discharger communities on the occurrence and levels of high priority, non-polar CECs in waters receiving effluent from the TIWRP, and the potential for bioaccumulation of these CECs by marine organisms. This study also will help determine the efficacy and relevance of PSD measurements compared with bioaccumulation by bivalves, a standard parameter used nationwide to assess the quality of coastal environments.

Approach:

An array of passive sampling devices (or PSDs), which include solid phase microextration (SPME) samplers and polyethylene devices (PEDs), and caged bivalves will be deployed at up to three stations representing near-, intermediate-, and far-field dilution from the TIWRP outfall in the Los Angeles Harbor (Fig. 1) and the HTP outfall in Santa Monica Bay (Fig. 2).

- Los Angeles Harbor—The targeted stations include HW33 (outfall) and candidate stations HW54 and HW65. The latter two stations will be determined by considering various logistical factors from a field reconnaissance survey. Permission to deploy moorings in the Harbor must be granted by United States Coast Guard/Department of Homeland Security, City of Los Angeles Port Pilots, and City of Los Angeles Port Police. Because the potential exists for conflict of interests, slight modification of station coordinates could be required. Permission was requested, but we still await a response.
- Santa Monica Bay—The targeted stations include 3505 (outfall) and up to two candidate stations representing a gradient away from the outfall. The latter two stations will be determined by

considering various logistical factors from a field reconnaissance survey.

If necessary, these moorings and PSD stations will be repositioned slightly to avoid ship and boat traffic, existing recreational or commercial fishing moorings, or other unforeseen situations. For each station, PSDs and caged bivalves will be fixed at a minimum of two depths, corresponding to near-bottom water (i.e., at the point of discharge) and 1-2 m below the surface.

The PSD array will include devices that target hydrophobic organic CECs. To allow for equilibrium, PSDs and caged bivalves will be deployed for a minimum of 30 and a maximum of 90 days. These media will be retrieved and shipped to SCCWRP for analysis of target CECs. Discrete water samples will be collected at the beginning and end of PSD deployment and analyzed for target CECs by a commercial lab using modified EPA (e.g. Method 1694 and 1698) and/or other up-to-date research grade methods. Data will be analyzed using strategies approved by the NOAA pilot study steering committee and will be summarized in a CLAEMD Special Study report. These data will also appear in a MW report that will compile similar information for more than 75 locations throughout California.

Project Duration:

This study will take approximately one year to complete with a start date of June 1, 2011 and anticipated completion by May 31, 2012.

Deliverables:

The City of Los Angeles will provide the following reports and publications to the Executive Officer of the Los Angeles Regional Water Quality Control Board (Regional Water Board):

1. Written quarterly progress reports will be submitted by February 15th, May 15th, August 15th, and November 15th each year for the duration of the study. The first quarterly progress report will be submitted on August 15, 2011. The progress reports will summarize the specific task(s) completed during the previous quarter, identify specific participants (and agency) that performed the task(s), and concisely present an analysis of any results obtained for that quarter, as well as a summary of the results obtained to date;

2. A copy of the MW reports summarizing the results of this study;

3. Any publications in peer-reviewed journals or presentations made at technical conferences related to this Special Study will be submitted;

4. In addition, the City of Los Angeles will deliver a presentation on the Special Study findings to the Regional Water Board at a regularly scheduled Board meeting.

Figure 1. Los Angeles Harbor Water Quality Stations and candidate Mussel Watch Special Study Moorings. Passive sampling devices will be located at mussel mooring stations, once determined.

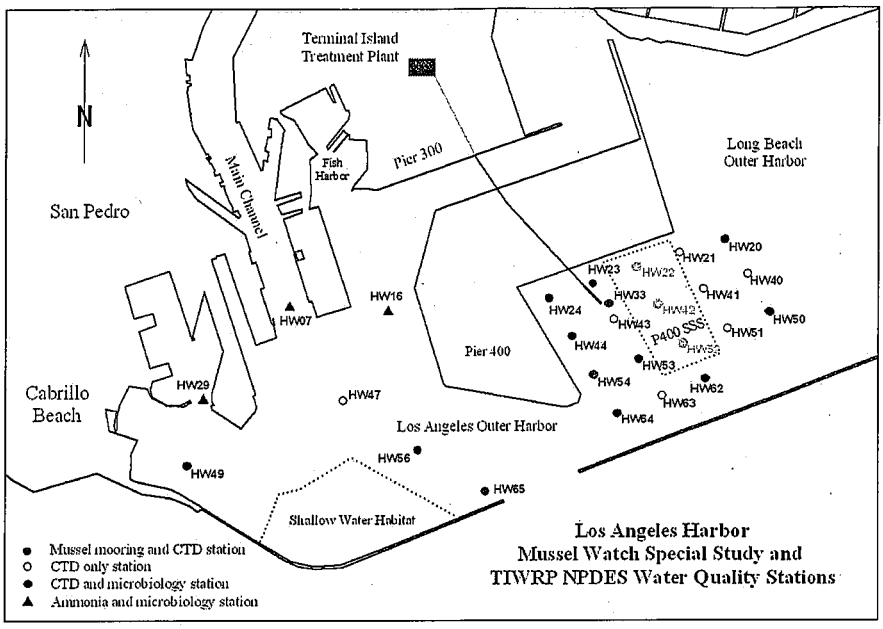
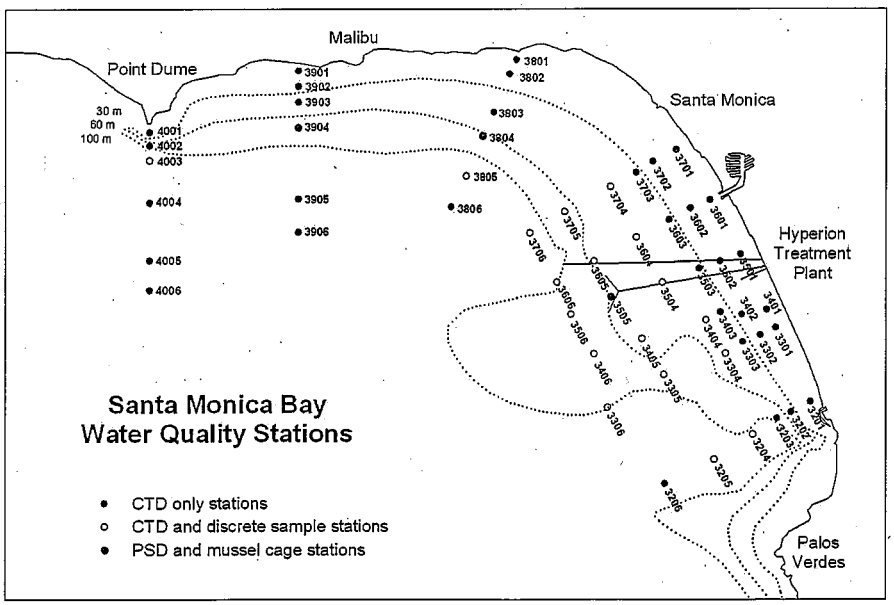


Figure 2. Santa Monica Bay Water Quality Stations and candidate Mussel Watch Special Study Moorings. Passive sampling devices will be located at mussel mooring stations, once determined.



Collaborators:

Southern California Coastal Water Research Project (SCCWRP), National Oceanic and Atmospheric Administration (NOAA) California Water Resources Control Board, San Francisco Estuary Institute, University of Southern California (USC) Sea Grant Program, and U.S. Geological Survey.

Project Cost:

An itemized description of estimated costs for this Special Study is provided in Table 2. SCCWRP, through their current USC Sea Grant project, is proposing to fund approximately 63% (~$30,000) of the Special Study costs listed in Table 2, while CLAEMD will fund the remaining approximate 37% (~$18,000). Costs not listed, but incurred, include City and SCCWRP staff time for field work and use of the City's vessels.

Table 2. Estimated costs for the Special Study.

UNIT	DESCRIPTION	COLLABORATOR	COST/UNIT	#UNITS	SUBTOTAL
PED/SPME	HARDWARE AND ANAYSIS	SCCWRP	$1,500	12	$18,000
VARIOUS	DISCRETE WATER ANAYSIS	TBD	$1,250	12	$15,000
MUSSELS	COLLECTION AND ACCLIMATION	AMS*	$250	12	$3,000
MUSSELS	TISSUE ANALYSIS	SCCWRP	$1,000	12	$12,000
			ESTIMATED TOTAL:		$48,000

*Applied Marine Sciences

City of Los Angeles
Bureau of Sanitation
Hyperion Treatment Plant (HTP)

Proposed Special Study
Special Monitoring Program during Proposed Repair of the HTP 5-Mile Outfall

Introduction:

The HTP discharges an average of 287 MGD (2007-2008) of secondary-treated wastewater into Santa Monica Bay through its 5-Mile Outfall. As the name implies, this discharge occurs approximately five miles from shore. This outfall, which was commissioned in 1960, was internally inspected November 28-30, 2006. This inspection found corrosion in the bulkheads of the Effluent Pumping Plant (EPP) Header; a critical point in the treated wastewater system. This corrosion needs to be addressed. Three alternative approaches are being considered, all of which will require removing it from service for a period of up to several months.

During the period that the 5-Mile Outfall is out of service, the discharge from HTP will be diverted to the 1-Mile Outfall. A similar diversion, resulting in the treated effluent being discharged much closer to shore, occurred during the inspection in November 2006. At that time, the Environmental Monitoring Division (EMD), working with numerous collaborators conducted a special monitoring effort to evaluate the impact of the diversion on Santa Monica Bay with special emphasis on nearshore bathing waters. Concurrently, an intensive outreach program was mounted to inform other governmental agencies, elected and appointed City officials, non-governmental organizations, residents of the potentially affected beach cities, as well as other stakeholders of Santa Monica Bay of the endeavor.

Objectives:

The EMD proposes to coordinate a similar special monitoring program and outreach effort during the proposed diversion to repair the 5-Mile Outfall EEP Header. These will be multi-year efforts. The first year (phase I) will focus on outreach and developing the monitoring effort.

Outreach will be primarily a City of Los Angeles effort, conducted by City staff. The monitoring program will be a multi-institution effort. During phase I, we propose to identify the institutions and individuals, the roles and responsibilities of each, design the monitoring program, and define reporting responsibilities and schedule.

Benefits:

The outreach program will ensure that information is available to responsible agencies and the public to minimize disruptions to beach recreational activities and maximize protection of public health and environment.

The monitoring program will provide critical information for protecting public health and environment, identifying any areas where beneficial uses may be compromised to ensure that any use restrictions are neither excessive nor underestimated, providing valuable environmental information on Santa Monica Bay, and developing methods for similar projects in other areas.

Approach:

During phase I, the outreach will determine who to contact, what information to provide, how to provide it, and who will do it. The monitoring effort will focus on identifying the participants, developing the program, and acquiring necessary equipment.

Project Duration:

Phase I will last one year. Phase II will focus on the actual diversion, which is anticipated to last a few weeks to months depending upon the repair approach selected and any unanticipated problems. Phase III will focus on producing a final report of the monitoring effort. Phases II and III are each proposed to be one year in duration.

Deliverables:

Phase I will result in two reports; one for the outreach effort and one for the monitoring plan. Phase II also will result in two reports. One will be the final report on the outreach effort. The other will be a progress report summarizing the major findings of the monitoring effort at that time. Phase III will produce a final monitoring report and identify any publications resulting from the effort.

Collaborators:

The outreach effort will involve few if any collaborators. The monitoring program will have numerous collaborators; these will be identified during phase I.