Prepared for:

TDY Industries, Inc., TDY Holdings, LLC, and Teledyne Ryan Aeronautical Company

1000 Six PPG Place
Pittsburgh, Pennsylvania

PCB Characterization Report
2701 North Harbor Drive
San Diego, California

Prepared by:

PROFESSIONAL GEOLOGIST
BRIAN R. HITCHENS
No. 7593
STATE OF CALIFORNIA

Brian Hitchens, PG., CHG.

Geosyntec consultants

engineers | scientists | innovators

10875 Rancho Bernardo Road, Suite 200
San Diego, California 92127-1461

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EXECUTIVE SUMMARY

Report Objective

The objectives of this Report are to summarize the current understanding of known polychlorinated biphenyl (PCB) sources on at 2701 North Harbor Drive (the Site) and to evaluate the relative significance of each source with regard to the potential to impact current and future on-site receptors, as well as the potential for the migration of impacts off-site to Convair Lagoon. This report is intended to be used as a comprehensive summary of the existing knowledge base of PCB data related to the Site so that remedial action can been planned to address those sources that are known to exist and pose potential threat to human health or the environment. Potential off-site migration of the sources identified within this document is evaluated within Appendix A of the Risk Assessment (Geosyntec, 2010). Those pathways which are deemed complete are further evaluated for remedial action alternatives within Appendix A to the Remedial Investigation/Feasibility Study (RI/FS) (Geosyntec, 2010).

PCB impacts within Convair Lagoon will be evaluated once remedial actions for on-site PCB sources have been completed.

To achieve the Report objectives, data were compiled from many current and historical studies. To present the data and conclusions from these reports as faithfully as possible, many sections of the original reports have been directly incorporated into this Report with referenced tables and figures from the original reports compiled in appendixes. Statements and conclusions from historical reports have been revised where necessary to accurately reflect current Site knowledge as it has changed with the acquisition of more recent Site data.

Summary of Previous PCB Investigations

Several investigations have been performed since 2001 to evaluate the nature and extent of PCBs at and in the vicinity of the Site. These primary investigations are summarized in the following reports:

- January 2001 - Environmental Assessment, Former Teledyne Ryan Aeronautical Site by PES Environmental;

- January 2002 - Convair Lagoon Technical Report by Brown and Caldwell;

- April 2002 - PCB Investigation Technical Report by Geosyntec;

- April 2002 - Results of Sediment Sampling Marine Corps Recruit Depot (MCRD);
- April 2002 - Report for the Investigation of Exceedances of the PCB Water Quality Objectives on the Convair Lagoon Sand Cap by the City of San Diego;
- July 2003 - Exterior Surface Sampling for PCBs by Haley & Aldrich;
- April 2003 - Report on Storm Water Conveyance System Maintenance by Haley & Aldrich;
- April 2004 - Baseline Site Investigation by Haley & Aldrich; and
- December 2005 - Site Characterization Report by Geosyntec.

These reports are summarized along with other stand-alone data sets and key figures and tables are included for reference. The full texts from these reports are included in the attached Appendix ZZ DVD.

<u>Historical PCB Removal Activities</u>

There have been numerous activities implemented at the Site to remove PCB impacted materials. These include removal of PCB containing capacitors and transformers, sediment cleanout from storm drains and catch basins, storm water conveyance system (SWCS) removal and replacement, targeted excavations, and site sweeping activities. These removal efforts are detailed and discussed in the related summary reports:

- 1982-1990 Removal of PCB containing materials, transformers, and capacitors
- October 1986 - Storm Drain Sediment Removal and Catch Basin Sediment Sampling in the 30-East SWCS;
- October 1988 - 15/30 Storm Drain System Removal and Replacement;
- 1997 General Dynamics (GD) SWCS Cleanout;
- 2004 GD SWCS Cleanout;
- 2006 SWCS Cleanout;
- 2007 SWCS Cleanout; and

- Site Sweeping Results.

Timeline of PCB Investigations and Remedial Actions

The timeline presented below provides an overview of the major investigative and remedial actions performed regarding PCBs at the site. Details regarding these activities are provided in the reports summarized in this report and included in the attached Appendix ZZ. This timeline is intended to provide historical context to these various actions and investigations.

- December 1982 – Spot welders containing PCB capacitors removed from Building 146;
- December 1985 – PCB containing capacitors in two other spot welders removed;
- 1986 – 380 mg/kg PCBs recorded in 54" SWCS sediment;
- October 1986 - sediment PCB concentrations up to 1,400 mg/kg reported in 30"-East SWCS, 130 mg/kg in 54" SWCS, 4,300 mg/kg in 60" SWCS, and 53 mg/kg in 30" SWCS to San Diego Bay;
- October 1986 – Cleanup and Abatement Order (CAO) 86-92 Issued for Cleanout of 30" East SWCS;
- October 1986 – 30" East SWCS Cleaned;
- October 1986 – 54" SWCS Sediment Removal from CB -56,-57, -58, -66, and -67;
- October 1986 – 60" SWCS sediment removal from CB-92, -130, and -133;
- October 1987 - 54" SWCS Sediment Removal from CB-64;
- November 1987 – 60" SWCS sediment removal from CB-91 and -102;
- 1987 – 450 mg/kg PCBs recorded in 54" SWCS sediment;
- 1987 – 13,000 mg/kg detected in HD-1 SWCS at GD Harbor Drive Site;
- 1988 – HD-1 Storm drain removed from GD Harbor Drive Site;

- December 1988 – PCB containing transformers and capacitors in electric vaults removed from the Site;
- March 1989 – 60" SWCS sediment removal from CB-97, -98, -99, -102, -104, and -133;
- December 1989 – 60" SWCS sediment removal from CB-97;
- December 1990 – all remaining PCB containing capacitors removed from the Site;
- March 1991 – 54" SWCS sediment removal from CB-55 and 30" SWCS sediment removal from CB 145;
- 1996 – 60" SWCS cleanout from north Site property line to Convair Lagoon Outfall;
- November 1996 – 30" SWCS sediment removed from CB-201 to Convair Lagoon outfall;
- 1996-1997 – Convair Lagoon Capped;
- 1997 – 360 mg/kg PCBs recorded in 60" SWCS sediment at GD/MCRD property boundary;
- May – June 1997 – General Dynamics 60" Storm Drain Cleanout from North TRA property boundary to MCRD/GD property boundary;
- May 1998 – WDR 98-21 issued for Convair Lagoon Post Closure Maintenance;
- October 1998 – January 1999 – 30-inch East SWCS system replaced;
- January 2001 - Environmental Assessment performed on-Site by PES Environmental;
- January 2002 - Convair Lagoon Technical Report Submitted by Port;
- March 2002 - On-Site SWCS Sediment Sampling report submitted by TDY;
- April 2002 - Sediment Sampling on MCRD;

- April 2002 Report for the Investigation of Exceedances of the PCB Water Quality Objectives on the Convair Lagoon Sand Cap submitted by the City of San Diego;

- January 2003 – On-Site Sediment Sampling and cleaning of 74 on-Site catch basins;

- May/June 2003 Exterior Surface Sampling for PCBs submitted by Port;

- April 2003 Report on Storm Water Conveyance System Maintenance submitted by Port;

- 2003-2004 - Baseline Site Investigation by Port of San Diego;

- October 2004 - CAO R9-2004-0258 Issued;

- 2004 - General Dynamics Storm Drain Cleanout;

- March – September 2005 - Site Characterization by TDY;

- October 2005 – West Side Concrete Chip Sampling – up to 62 mg/kg total PCBs;

- July – September 2006 Storm Drain Cleanouts on General Dynamics (GD), Airport, and TDY;

- October 2006 – Surface Sweeping, surface sediment up to 10 mg/kg total PCBs;

- December 2005 – Building Material PCB Sampling: up to 10 mg/kg in paint, average surface sediment of 23 mg/kg, up to 160 mg/kg in concrete, up to 7,800 mg/kg in concrete joint material;

- January 2006 – Off-Site PCB surface sampling: Paint chips: 1.3 mg/kg, asphalt 2.8 mg/kg, joint compound up to 2 mg/kg;

- October 2006 – Sinkhole identified adjacent to 60" SWCS due to tributary breach. Sediment removed from 60" SWCS contained 0.063 mg/kg PCBs;

- January 2007 – Sediment sampled from CB D-7 at GD/(MCRD boundary up to 24 mg/kg total PCBs;

- January 2007 – Samples collected from 60" SWCS backfill to evaluate potential sediment infiltration, no PCBs detected;

- February 2007 – Tributary Filter Sock Samples – Sediment up to 550 mg/kg total PCBs from tributary west of CB-133;

- May 2007 – CB-104 diversion system installed to divert and filter flow from impacted CB-133 tributary;

- July 2007 – 60" SWCS sediment removal from CB-133 to CB-134;

- August 2007 – up to 8.6 mg/kg PCBs in Light Non-Aqueous Phase Liquid (LNAPL) observed in south central Building 120, post-ex samples non-detect (ND) for PCBs;

- August 2007 – Historic PCB hotspot excavated in Building 156;

- October 2007 – Surface Sweeping, surface sediment up to 5.8 mg/kg total PCBs;

- October 2007 – Seven samples collected beneath the concrete slabs in Building 120, 166, and 121 PCBs detected up to 0.296 mg/kg;

- February 2008 – Filter sock samples collected with a maximum of 5.5 mg/kg total PCBs from tributary east of CB-133;

- April 2008 – Filter sock samples collected with a maximum of 1,700 mg/kg from tributary from west of CB-131;

- April 2008 – CB-90 Diversion system installed to divert and filter flow from impacted CB-131 tributary;

- July 2008 – Surface Sweeping, surface sediment approximately 0.72 mg/kg total PCBs;

- March 2008 – 4.0 mg/kg PCBs in LNAPL observed at Area D;

- March 2008 – Area D impacts excavated, LNAPL removed;

- December 2009 – Phase II investigation at GD Lindbergh Field Plant by Airport average soil PCB concentration of 0.265 mg/kg; and

- January 2010 – Site-Wide PCB sampling in groundwater, PCBs were only detected in 1 well on-site well adjacent to 30" east SWCS, and at trace concentrations in the Convair Lagoon vicinity wells.

Current Site Conditions

Reports and data are summarized which describe the currently known distribution of PCBs in Site soils, sediments, building materials, and groundwater through January 2010. A PCB Conceptual Site Model (CSM) has been refined to graphically illustrate the known PCB sources and pathways at the Site, as well as relevant media potentially containing ambient PCB concentrations. This CSM is based on the extensive Site investigations which have been performed.

Building Materials: Moderate concentrations of PCBs, up to about 10 mg/kg have been identified in building material, such as paint and transite siding. Higher concentrations of PCBs, have been identified in on-site concrete, up to approximately 160 mg/kg and in concrete joint material up to 7,800 mg/kg. As the Site ages, these materials have weathered to varying degrees, contributing to ongoing low to moderate PCB concentrations in surface sediment. These sources will be removed during Site demolition.

Surface Sediment: While the site is over 90% paved, sediment accumulates across the surface of the site through a mixture of atmospheric deposition and weathering of building structures and deposition of organic detritus from on-site landscaping. This sediment contains moderate concentrations of PCBs with concentrations up to approximately 6 mg/kg. However, the majority of sediment on site contains PCB concentrations of less than 1 mg/kg. The source of PCBs to surface sediment will be removed during Site demolition.

SWCS Sediment: Storm drain sediment continues to contain significant PCB impacts with concentrations up to approximately 1,700 mg/kg. The high PCB concentration sediment data has been identified with storm drain tributaries which were not able to be completely cleaned through historical storm drain cleanout efforts due to the storm drain construction and obstructions within the drains. These tributaries are currently disconnected with the SWCS and all tributaries will be removed during Site demolition. Moderate concentrations of PCBs have also been identified in upgradient off-site storm drain sediment samples within the 60-inch SWCS.

Soil: PCB impacts in soil are not widespread. Existing site characterization data has indicated relatively few areas with localized PCB impacts which have been largely addressed by historical removal actions. Remaining impacts include areas in Building 120 and south of Building 180 where moderate concentrations of PCBs from 5-10 mg/kg have been observed associated with TPH impacts in soil. Post-excavation sample results also indicate residual PCB impacts in soil in the vicinity of the historical 30-inch East SWCS excavation.

Groundwater: Groundwater was sampled for PCBs site-wide in January 2010. Detectable concentrations of PCBs were only found in one monitor well, located southeast of Building 120, adjacent to an area of known soil PCB impacts in the vicinity of the 30-inch east SWCS.

Storm Water: Current storm water sampling data have not contained detectable levels of PCBs, however ambient concentrations of PCBs are commonly observed at trace levels in urban rainfall due to the ubiquitous presence of PCBs at low levels throughout the global environment.

Scope of Site Demolition Activities

Site demolition activities are currently planned to begin in the 1st quarter 2010. The scope of the demolition activities include removal of all above grade structures and appurtenances, followed by removal of all concrete slabs, foundations, utilities, and storm water conveyance systems, with the exception of the main trunk of the 60-inch and 54-inch SWCS. During demolition activities all storm drain systems will be sealed and all storm water runoff will be collected, treated, and discharged to the sanitary sewer system.

All PCB impacted concrete will be removed from the Site, however some uncontaminated concrete may be crushed and re-used as sub-base with import fill, followed by the placement of 1.5 to 2 inches of asphalt or overlay or other suitable surface treatment to minimize dust generation and runoff of surface sediment from the Site. Low Impact Design (LID) Best Management Practices (BMPs) consistent with Standard Urban Storm Water Mitigation Plan (SUSWMP) requirements are also anticipated to be implemented post-demolition to encourage infiltration of storm water on-site and reduce runoff and minimize storm drain impacts.

Summary

Many studies have been performed to evaluate the source, fate, and transport of PCBs at the Site. These studies have investigated On- and Off-Site sediment impacts throughout the SWCS, building materials (paint, concrete, joint compound), surface sediments, soil, and groundwater. Based on these studies, several sources of PCB impacts have been identified:

On-Site to be Removed by Demolition:

Building Materials
• Concrete joint compound with concentrations of approximately 7,800 mg/kg; • On-site concrete with concentrations up to approximately 160 mg/kg; • Building paint with concentrations up to approximately 10 mg/kg; • Transite siding with concentrations up to approximately 6.2 mg/kg;
Sediment
• On-Site tributaries with sediment concentrations up to 1,700 mg/kg. • On-site surface sediment with concentrations up to approximately 6 mg/kg.

On-Site Other:

Soil
• On-site soil in the vicinity of the 30-inch East SWCS.
Sediment
• On-site 60-inch SWCS System Sediment, with concentrations up to approximately 1,400 mg/kg Total PCBs.
Groundwater
• On-site Groundwater with concentrations up to approximately 30 ug/L; • LNAPL on-site with concentrations up to approximately 9 mg/L; and • Convair Lagoon vicinity groundwater with concentrations of less than 10 ng/L.

Off-Site:

Building Materials
• Off-site joint compound, paint, asphalt with concentrations up to approximately 2 mg/kg.
Sediment:
• Off-Site SWCS system sediment, with concentrations up to approximately 20 mg/kg; and • Off-Site Surface sediment with concentrations up to approximately 2 mg/kg.
Soil:
• Off-Site Soil, with Concentrations up to approximately 0.5 mg/kg.

Ambient:

Rainfall
• Potential atmospheric deposition of PCBs through rainfall, with concentrations up to about 0.25 ug/L (WHO, 1992).

The on-site sources will be evaluated in the Appendix A to the Risk Assessment (Geosyntec, 2010) and the sources with potentially complete post-demolition exposure pathways identified in the Risk Assessment will be further evaluated for potential remedial alternatives in the Appendix A to the RI/FS.

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1. INTRODUCTION

This PCB Characterization Report (Report) presents the results of investigations and remedial actions which have been performed to evaluate and mitigate polychlorinated biphenyl (PCB) sources at 2701 North Harbor Drive (the Site) through January 2010.

This report has been prepared by Mr. Brian Hitchens, PG., CHG. and Mr. Chris Lieder, PG. This report was reviewed by Mr. Sam Williams, PG., CHG. in accordance with the peer review policy of the firm.

1.1 PCB Characterization Report Objective

The objectives of this Report are to summarize the current understanding of known PCB sources on the Site and to evaluate the relative significance of each source with regard to the potential to impact current and future on-site receptors, as well as the potential for the migration of impacts off-site to Convair Lagoon. This report is intended to be used as a comprehensive summary of the existing knowledge base of PCB data related to the Site so that remedial action can be planned to address those sources that are known to exist and pose potential threat to human health or the environment. Potential off-site migration of the sources identified within this document is evaluated within Appendix A of the Risk Assessment (Geosyntec, 2010). Those pathways which are determined to be complete are further evaluated for remedial action alternatives within Appendix A to the RI/FS (Geosyntec, 2010).

PCB impacts within Convair Lagoon will be evaluated once remedial actions to mitigate further migration of PCBs to the Lagoon have been completed.

To achieve the Report objectives, data were compiled from numerous current and historical studies. To present the data and conclusions from these reports as faithfully as possible, applicable sections of the original reports have been directly incorporated into this Report with referenced tables and figures from the original reports compiled in appendixes. Statements and conclusions from historical reports have been revised where necessary to accurately reflect current Site knowledge, which has changed with the acquisition of more recent Site data.

1.2 Limitations

The data and conclusions presented in this Report are based solely on the analyses performed by and for Geosyntec and data provided by other named sources. For data provided without laboratory reports and corresponding chain of custody forms, no attempt has been made to verify whether the data are representative, accurate, or complete. Geosyntec cannot provide any assurances concerning the data presented to us without complete sample documentation.

1.3 Report Organization

The remainder of this report consists of the following:

- Section 2 "*Summary of Previous PCB Investigations*", presents historical reports which document potential sources of PCBs in the vicinity of the Site;
- Section 3 "*Historical PCB Removal Activities*", describes PCB removal activities which have occurred, and the location of historical PCB impacts identified during removal activities;
- Section 4 "*Current Site Conditions*" presents the currently known distribution of PCBs at the Site, based on data obtained through January 2010;
- Section 5 "*Description of Planned Site Demolition*", describes the proposed site demolition activities.
- Section 6 "*Summary*", summarizes the current understanding of PCB sources at the site.
- Section 7 "*References*", provides citations for referenced literature.

2. SUMMARY OF PREVIOUS PCB INVESTIGATIONS

Several investigations have been performed since 2001 to evaluate the nature and extent of PCBs at and in the vicinity of the Site. These investigations are summarized in the following reports:

- Environmental Assessment, Former Teledyne Ryan Aeronautical Site dated January 2001 by PES Environmental;
- PCB Investigation Technical Report dated April 2002 by Geosyntec;
- Results of Sediment Sampling Marine Corps Recruit Depot (MCRD) dated April 2002;
- Report for the Investigation of Exceedances of the PCB Water Quality Objectives on the Convair Lagoon Sand Cap by the City of San Diego dated April 2002;
- Convair Lagoon Technical Report dated January 2002 by Brown and Caldwell;
- Exterior Surface Sampling for PCBs dated July 2003 by Haley & Aldrich
- Report on Storm Water Conveyance System Maintenance dated April 2003 by Haley & Aldrich
- Baseline Site Investigation dated April 2004 by Haley & Aldrich; and
- Site Characterization Report dated December 2005 by Geosyntec.

2.1 <u>Timeline of PCB Investigations and Remedial Actions</u>

The timeline presented below provides an overview of the major investigative and remedial actions performed regarding PCBs at the site. The details regarding these activities are provided in the reports summarized in the following sections and included in the attached Appendix ZZ. This timeline is intended to provide historical context to these various actions and investigations.

- December 1982 – Spot welders containing PCB capacitors removed from Building 146;

- December 1985 – PCB containing capacitors in two other spot welders removed;
- 1986 – 380 mg/kg PCBs recorded in 54” SWCS sediment;
- October 1986 - sediment PCB concentrations up to 1,400 mg/kg reported in 30”-East SWCS, 130 mg/kg in 54” SWCS, 4,300 mg/kg in 60” SWCS, and 53 mg/kg in 30” SWCS to San Diego Bay;
- October 1986 – Cleanup and Abatement Order (CAO) 86-92 Issued for Cleanout of 30” East SWCS;
- October 1986 – 30” East SWCS Cleaned;
- October 1986 – 54” SWCS Sediment Removal from CB -56,-57, -58, -66, and -67;
- October 1986 – 60” SWCS sediment removal from CB-92, -130, and -133;
- October 1987 - 54” SWCS Sediment Removal from CB-64;
- November 1987 – 60” SWCS sediment removal from CB-91 and -102;
- 1987 – 450 mg/kg PCBs recorded in 54” SWCS sediment;
- 1987 – 13,000 mg/kg detected in HD-1 SWCS at GD Harbor Drive Site;
- 1988 – HD-1 Storm drain removed from GD Harbor Drive Site;
- December 1988 – PCB containing transformers and capacitors in electric vaults removed from the Site;
- March 1989 – 60” SWCS sediment removal from CB-97, -98, -99, -102, -104, and -133;
- December 1989 – 60” SWCS sediment removal from CB-97;
- December 1990 – all remaining PCB containing capacitors removed from the Site;

- March 1991 – 54” SWCS sediment removal from CB-55 and 30” SWCS sediment removal from CB 145;
- 1996 – 60” SWCS cleanout from north Site property line to Convair Lagoon Outfall;
- November 1996 – 30” SWCS sediment removed from CB-201 to Convair Lagoon outfall;
- 1996-1997 – Convair Lagoon Capped;
- 1997 – 360 mg/kg PCBs recorded in 60” SWCS sediment at GD/MCRD property boundary;
- May – June 1997 – General Dynamics 60” Storm Drain Cleanout from North TRA property boundary to MCRD/GD property boundary;
- May 1998 – WDR 98-21 issued for Convair Lagoon Post Closure Maintenance;
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- April 2002 - Sediment Sampling on MCRD;
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- January 2003 – On-Site Sediment Sampling and cleaning of 74 on-Site catch basins;
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- March – September 2005 - Site Characterization by TDY;
- October 2005 – West Side Concrete Chip Sampling – up to 62 mg/kg total PCBs;
- July – September 2006 Storm Drain Cleanouts on General Dynamics (GD), Airport, and TDY;
- October 2006 – Surface Sweeping, surface sediment up to 10 mg/kg total PCBs;
- December 2005 – Building Material PCB Sampling: up to 10 mg/kg in paint, average surface sediment of 23 mg/kg, up to 160 mg/kg in concrete, up to 7,800 mg/kg in concrete joint material;
- January 2006 – Off-Site PCB surface sampling: Paint chips: 1.3 mg/kg, asphalt 2.8 mg/kg, joint compound up to 2 mg/kg;
- October 2006 – Sinkhole identified adjacent to 60” SWCS due to tributary breach. Sediment removed from 60” SWCS contained 0.063 mg/kg PCBs;
- January 2007 – Sediment sampled from CB D-7 at GD/(MCRD boundary up to 24 mg/kg total PCBs;
- January 2007 – Samples collected from 60” SWCS backfill to evaluate potential sediment infiltration, no PCBs detected;
- February 2007 – Tributary Filter Sock Samples – Sediment up to 550 mg/kg total PCBs from tributary west of CB-133;
- May 2007 – CB-104 diversion system installed to divert and filter flow from impacted CB-133 tributary;
- July 2007 – 60” SWCS sediment removal from CB-133 to CB-134;

- August 2007 – up to 8.6 mg/kg PCBs in Light Non-Aqueous Phase Liquid (LNAPL) observed in south central Building 120, post-ex samples non-detect (ND) for PCBs;
- August 2007 – Historic PCB hotspot excavated in Building 156;
- October 2007 – Surface Sweeping, surface sediment up to 5.8 mg/kg total PCBs;
- October 2007 – Seven samples collected beneath the concrete slabs in Building 120, 166, and 121 PCBs detected up to 0.296 mg/kg
- February 2008 – Filter sock samples collected with a maximum of 5.5 mg/kg total PCBs from tributary east of CB-133;
- April 2008 – Filter sock samples collected with a maximum of 1,700 mg/kg from tributary from west of CB-131;
- April 2008 – CB-90 Diversion system installed to divert and filter flow from impacted CB-131 tributary;
- July 2008 – Surface Sweeping, surface sediment approximately 0.72 mg/kg total PCBs;
- March 2008 – 4.0 mg/kg PCBs in LNAPL observed at Area D;March 2008 – LNAPL removed from Area D to greatest practicable extent;
- December 2009 – Phase II investigation at GD Lindbergh Field Plant by Airport average soil PCB concentration of 0.265 mg/kg; and
- January 2010 – Site-Wide PCB sampling in groundwater, PCBs were only detected in 1 well on-site well adjacent to 30” east SWCS, and at trace concentrations in the Convair Lagoon vicinity wells.

These reports are summarized along with other stand-alone data sets and key figures and tables are included for reference. The full texts from these reports are included in the attached Appendix ZZ DVD.

2.2 PES Environmental Assessment

The 2001 PES report is a summary of historical site conditions and use and documentation of observed site conditions at the time of the report (Appendix ZZ). PES performed the following tasks during this assessment:

- Reviewed regulatory agency files for the site with respect to hazardous materials use, storage, hazardous waste generation, and releases of hazardous materials;
- Reviewed available site-related environmental documents stored at the site;
- Reviewed historical information and conducted historical research for the site;
- Reviewed previously prepared environmental reports concerning the site, which were available from the San Diego County Department of Environmental Health (DEH); California Regional Water Quality Control Board, San Diego Region (RWQCB); California Environmental Protection Agency, Department of Toxic Substances Control (DTSC); the San Diego Air Pollution Control District (APCD) and from onsite records;
- Conducted a reconnaissance of the site; and
- Prepared this report presenting the results of the site reconnaissance and the review of environmental documents performed as part of the environmental assessment.

2.2.1 Description of Current and Historical Conditions

At the time of the site inspection (November 15-17, 2000) the site was essentially vacant. Portions of Buildings 100 and 104 are occupied by JLL and Northrop, respectively and used for office and computer server purposes. Nearly all manufacturing and assembly equipment has been removed from the site. For the most part, only equipment that formerly supported manufacturing/assembly operations such as compressors, transformers, boilers and piping remains.

During the site inspection and review of onsite and agency files, a compilation was made of each building and area regarding their: (1) general description; (2) function (e.g., as gleaned from observations and/or review of site maps/records); (3) key features; and (4) equipment or chemical use, storage or handling.

The significant findings of the site inspection and onsite file review are as follows:

1. Although many of the buildings were constructed several decades ago, the buildings appear to be in relatively good shape and appear to have been well maintained.

2. Manufacturing and/or testing operations were conducted at many buildings and areas at the site including: Building 157; Test Cell 4 area; Buildings 230, 152, 154, 156, 131, 159, 140, 158; the Downdraft Spray Booth; Buildings 153, 146, 146A, 105, 115, 126; Former Building 222; Building 125; the Coolant/Oil Recovery Building and Former Pickle Line Area; Buildings 129,120, 111, 128, 112,110, 170, 127,167,169,161, 160, 181, and 183.

   At most of these buildings/areas, equipment footprints and other features interpreted to be former or current utility corridors, drains, vaults and/or sumps are present. Degreasing, painting, chemical milling and/or metal fabrication took place at many of these buildings. In a few cases, environmental investigations have been conducted at the location of these features and soil and/or groundwater contamination has been documented.

3. Stained, corroded and/or cracked concrete or flooring is present at a number of locations including: Building 157; Test Cell 4 area; Buildings 230, 152, 154, 156, 142, 131, 140, 158; Downdraft Spray Booth; Buildings 146, 105, 115, 125; Coolant/Oil Recovery Building and Former Pickle Line Area; Buildings 123, 129, 130, 120, 112, 170, 127, 167, 169, 161, 168, and 183.

4. Chemicals were used, stored and/or handled at a number of locations including: the Explosives Area; Building 157; Test Cell 4 area; Buildings 230, 152, 154, 156, 142, 131, 140, 158; Downdraft Spray Booth; Buildings 153, 146, 146A, 105, 115, 126; Former Building 222; Building 125; Coolant/Oil Recovery Building and Former Pickle Line Area; Buildings 123, 129, 130, 120, 128, 110, 170, 127; Solvent AST; Buildings 169, 161, 160 and 183.

2.3 PCB Investigation Technical Report

On 5 and 7 March 2002, Geosyntec collected 19 sediment samples at various locations within the storm drain system to evaluate current PCB concentrations of sediments in the storm drains (Appendix A, Exhibit 2-3). TDY conducted these investigations in response to a request for additional investigation from the RWQCB pursuant to Water Code Section 13267. The principle conclusions and synopses from this report are directly incorporated in the following sections. The referenced tables and figures are located in Appendix A and an electronic copy of the full report is located in Appendix ZZ.

The data presented below represents the understanding of Site conditions through April 2002. The sampling locations are as follows:

- Four samples from the 54" storm drain system: at the outfall, at manhole (MH) 63, MH 20 and MH 49;
- One sample from the 30" W. storm drain system: at the outfall;
- Nine samples from the 60" storm drain system: at the outfall; at MH 133, at each of the two tributaries that discharge into MH 133 from the west, at catch basin (CB) 124, at MH 131, at the tributary to MH 131, and at CB 89; and
- Five samples from the 30" storm drain system: at MH 201, CB 154, CB 152, CB 147 and CB 144. On 9 April 2002, Geosyntec collected an additional sample at CB 161.

2.3.1 Tidal Influence Survey

A tidal influence survey was conducted at the Site, and consisted of the following:

- Identifying sections of the storm drain system that are tidally influenced by observing and measuring water levels in manholes and catch basins; and
- Measuring the water velocity in the 60" storm drain system during rising tide.

Water level observations on 5 and 7 March and 9 April 2002 during high tide indicate that the main 60” storm drain is tidally influenced at least up to MH 131. At that location, water in the storm drain was observed flowing from Convair Lagoon in the direction of the airport.

The tributaries of the 60” system that feed into MH 131 and MH 133 were observed on 9 April 2002 at high tide. High tide was predicted for 8:26 am that day, and elevations were measured at approximately 8:30 am [NOAA, 2002]. At MH 131, the tributary was not influenced by the tide on that day. At MH 133, the Tributary T2 was tidally influenced but the other two tributaries to the west were not (T1 and an undesignated tributary) and neither was the tributary to the east. Tributaries T1 and T2 were sampled during the 2002 sediment sampling program, but the others were not. Field notes from the tidal measurements are in Attachment C.

The high tide elevation in the San Diego Bay for 9 April 2002 at 8:26 am was compared to the maximum high tide measured since the completion of the 60” system cleanouts in May 1997 [NOAA, 2002]. The water levels measured in the tributaries on 9 April 2002 were corrected to account for the difference in tide periodicity, using the worst case of the maximum high tide on 13 November 1997. The results indicate that at the former TRA facility, while only Tributary T2 within the 60” system was tidally influenced on 9 April 2002, in the past (e.g., on 13 November 1997), Tributary T1, the other tributary to the west and part of the eastern tributary were tidally influenced as well. Therefore, the four tributaries to MH 133 have the potential to be tidally influenced in the future.

Water velocity in the 60” storm drain system at MH 131 and MH 133 was measured during rising and receding tides using a Marsh-McBirney Flomate 2000 flow meter on 9 April 2002. Ten measurements were taken between 5:40 am and 12:40 pm, half each in MH 131 and MH 133. The water velocity ranged from 0.09 to 0.47 feet per second (ft/s) during either incoming or outgoing tide. The maximum measured velocity during incoming tide was 0.3 ft/s, measured in the center of the pipe at 7:00 am in MH 133.

Published literature states that the typical water velocity required to mobilize sediments ranging in size from 0.001 to 100 mm is a minimum of 0.7 to 2.9 ft/sec [Schwab and Prothero, 1996; Julien, 1998], approximately two to ten times higher than the maximum incoming tidal flow velocity measured in the 60” storm drain system on 9 April 2002.

PCBs can be transported through the storm drain system when they are adsorbed to soil particles (i.e., sediments). If sediments are not transported from Convair Lagoon or the former TRA facility to upgradient properties by tidal action, then PCBs cannot be transported in that manner either. Given that the measured velocities in the 60" line are below the velocity threshold need to mobilize sediments, it does not appear likely that PCB-containing sediments could be carried by tidal action in the 60' line from Convair Lagoon or the former TRA facility to upgradient properties.

2.3.2 PCB Use, Storage and Disposal

2.3.2.1 Overview

Historically, there were three or possibly four main potential sources of PCBs at the former TRA facility: (i) electric vaults (i.e., transformers and capacitors); (ii) spot welders (i.e., capacitors); (iii) storage areas; and (iv) possibly machinery (i.e., PCB-containing hydraulic fluids or cutting oils) [TRA, 1972]. These potential sources are described in the sections below, as are the documented removals of the PCB-containing materials and equipment. Note that by 31 December 1990, no PCB-containing equipment was left in place or stored at the TRA facility [TRA, 1990].

2.3.2.2 Transformers and Capacitors

The former TRA facility had 11 electric vaults distributed across the Site near Buildings 120, 140, 148, 150, 152, 154, 157, 181, and 240 (Appendix A, Exhibit 4-1). Ten of the eleven vaults housed PCB-containing materials in them (Vault #3 never housed PCB-containing materials). In total, the ten vaults contained 19 PCB-containing transformers. The PCB-containing transformers and capacitors enclosed in the electric vaults were removed between 12 January 1986 and 10 December 1988 (Appendix A, Exhibit 4-2).

PCB-containing capacitors also were used in spot welding operations. The main spot welding operations were conducted in Building 146 (Appendix A, Exhibit 3-1). Eight spot welders in Building 146 contained a total of 166 PCB-containing capacitors, which were removed by December 1982. In other location(s), a total of 40 other capacitors in two spot welders were removed by December 1985. Finally, according to TRA records, the removal of other remaining capacitors was completed between July and December 1990 [TRA, 1990].

2.3.2.3 Machinery

Historically, machinery containing hydraulic fluids and/or cutting oils was used at various locations around the former TRA facility, with the main metals cutting area in the northeast section of Building 120 [TRA, 1972]. While historically many high-pressure hydraulic fluids and cutting oils used PCBs as an additive to stabilize the fluids/oils and reduce degradation rates in high-pressure, high-temperature environments, no documentation was located concerning the specific fluids/oils used at the former TRA facility.

2.3.2.4 Storage Areas

A material storage area was located in Building 157 (northwest corner of the Site). PCB dielectric oil (used to replenish the transformers) was stored there. Also, based on current understanding of the former TRA facility's operations, PCB capacitors and other PCB-contaminated materials (e.g., concrete, wood, soil) were stored there temporarily pending disposal during the removal and disposal of PCB-containing equipment (Section 2.2).

2.3.3 54" Storm Drain System

The 54" storm drain system is located on the western side of the TRA property (Appendix A, Exhibits 1-1, 4-1). The 54" system is a continuation of the storm drain from the San Diego Airport Lindbergh Field facility, and it enters the Site from the north and the west. Those two branches traverse the Site and join near Building 156. Then a single branch continues south to Convair Lagoon. The 54" system is connected to the 60" system on Airport property, north of the former TRA facility. Drainage west of MH 29 is to the 54" system and drainage to the east of MH 29 is to the 60" system.

Although the 54" system was not the subject of systematic investigation, the PCB concentrations in the 54" system historically have been relatively low. The maximum total PCB concentrations recorded in sediment in the 54" system were 380 and 450 mg/kg at CB 64, recorded in 1986 and 1987 [Brown and Caldwell and MEC, 2002]. Various investigations of PCBs in Convair Lagoon, including a 1986 RWQCB Staff Testimony, concluded that storm drain systems other than the 54" system were the predominant sources of PCBs discharging to Convair Lagoon.

2.3.4 30" W. Storm Drain System

The 30" West (30" W) storm drain system is located in the southwest portion of the Site, between the 54" and 60" storm drain systems (Appendix A, Exhibit 6-1). It drains solely the parking area of the former TRA facility, and is comprised of four catch basins and one manhole and the interconnecting lines.

2.3.5 60" Storm Drain System

The 60" storm drain system is at the center of the Site, traversing from the northern to the southern property boundaries and passing beneath several buildings, most notably Building 120 (Appendix A, Exhibit 7-1). The main 60" line is a continuation of a storm drain system for properties north of the Site: starting north of Pacific Highway in the jurisdiction of the City of San Diego, passing onto the former General Dynamics Lindbergh Field property, then to the San Diego Airport Lindbergh Field, and finally onto the former TRA facility, and eventually to Convair Lagoon. Also, a tributary that is part of the 60" system connects into the main line near Pacific Highway and drains a portion of the MCRD property. The 60" system is connected to the 54" system on airport property, north of the former TRA facility. Drainage east of MH 29 is to the 60" system and drainage to the west of MH 29 is to the 54" system.

The 60" system drains an area of approximately 67 acres [City of San Diego, 2002b], of which fewer than approximately 20 acres are on the former TRA facility. The 60" system has numerous tributaries and, as noted above, crosses several property boundaries (i.e., City, MCRD, Airport, TRA).

Concentrations of PCBs in sediments in the 60" system at the former TRA facility historically have been less than in the 30" E. storm drain system but greater than the other Site storm drain systems. Generally, total PCB concentrations in catch basins within this system have been less than or equal to 1,000 mg/kg. After the line cleanout in early 1997 (Section 3.3.2), concentrations decreased significantly.

Limited historical data regarding PCB concentrations in the 60" system at other facilities upgradient of the former TRA facility is available. Fourteen locations were sampled in March and April 1997 along the 60" system from the TRA / San Diego Airport Lindbergh Field property line to Pacific Coast Highway and along the tributaries that connect to the 60" line at Pacific Coast Highway. The concentrations ranged from 0.9 to 360 mg/kg [Port, 1997]. The maximum of 360 mg/kg was measured in April 1997 at the former General Dynamics Lindbergh Field facility at the intersection of Pacific Highway and the General Dynamics / MCRD property boundary

[Port, 1997]. After the off-site line cleanout in May 1997 (Section 3.3.2), concentrations in the 60" system greater than the Convair Lagoon WDR 98-21 action level still were recorded from locations upgradient of the former TRA facility.

2.3.6 30" E. Storm Drain System

The 30" E. storm drain system is located east of the 60" storm drain system (Appendix A, Exhibit 8-1), in the central eastern side of the Site. This system is sometimes referred to as the 15/30 or the 18/30 system. The 30" E system drains the eastern portion of the former TRA facility and is not connected to storm drain systems at neighboring properties.

The 30" E system historically has been the focus of much of the investigation of PCBs in Convair Lagoon. The highest concentrations in the storm drain system on the former TRA facility (sediment concentrations up to 26,000 mg/kg) was found in the 30" E system (primarily in CBs 144, 145, 146, 147, 150, 152 and 153), which was subsequently removed in October 1998 – January 1999 (Section 3.2).

2.4 2002 MCRD Sediment Sampling

In 2002, MCRD conducted sediment sampling within their on-site SWCS in response to the 7 November 2001 request by the RWQCB for assistance in identifying potential origins of PCBs in Convair Lagoon pursuant to Water Code Section 13267. MCRD performed sediment sampling at three catch basins and evaluated potential tidal influence at each catch basin. The referenced tables and figures are included within Appendix S, and an electronic copy of the full report is located in Appendix ZZ.

Catch Basin SDEM-01, a tributary catch basin on the south side of MCRD, adjacent to the Hazardous Waste Storage Area contained 1.01 mg/kg of PCBs. The remaining two upstream tributary catch basins, SDEF-01 and SDEN-01, contained no detectable PCBs, ND<0.188, ND<0.375 respectively (Appendix S, Figure 2). Each catch basin was inspected at low and high tide. No flow or change in standing water level elevation was observed, and it was concluded that the tide did not appear to influence the sampled catch basins.

2.5 2002 City of San Diego Investigation of Exceedances of Water Quality Objective on the Convair Lagoon Sand Cap

In 2002, the City of San Diego conducted sediment sampling within the SWCS upgradient of General Dynamics and MCRD in response to the 7 November 2001 request by the RWQCB for assistance in identifying potential origins of PCBs in Convair Lagoon pursuant to Water Code Section 13267. The City also conducted a CCTV survey of the 60-inch SWCS.

2.5.1 Sampling Plan - Analytical Results

In accordance with the January 9, 2002 Work Plan, three sampling sites were established:

1. Intersection of Bandini Street and the Pacific Highway Frontage Road (within tidal intrusion influence).

2. Upstream of 2195 Noell Street (outside of tidal intrusion).

3. Noell Street under Interstate 5 (outside of tidal intrusion).

On January 30, 2002, Garret Williams, Biologist, collected samples during the afternoon negative tides when the sediments were exposed. Samples were collected at the Intersection of Bandini Street and the Pacific Highway Frontage Road, and at Noell Street under Interstate 5. Sediment was not present to be collected in the vault upstream of 2195 Noell Street sample site.

The City of San Diego used the sediment sample collection protocols that were provided in the report provided to the Regional Water Quality Control Board on January 9, 2002. EnviroMatrix Laboratories performed the required analytical analyses using the approved EPA Method 8081. The samples were analyzed for Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, and Aroclor-1260. These parameters were used due to the PCBs persistence in the environment. The results for both samples were ND for the constituents indicating the concentrations were not detected at or above the reporting limit of 20 parts per billion (ug/kg).

2.5.2 Structural Integrity Investigation

The City of San Diego contracted with Affordable Pipeline Services to perform a CCTV survey of the 60-inch reinforced concrete storm drain pipeline that discharges into Convair Lagoon. The survey was conducted over a period of three days, March 25-27, 2002. These particular days were chosen to survey the pipeline because ofthe negative low tides that occurred during the afternoon. The survey was performed by placing a specialized camera system into a manhole or an outfall, and then televising upstream and downstream of that particular entrance point. The complete storm drain pipeline was not televised due to an accumulation of sediments that would not allow further televising between the manholes.

On Monday, March 25, 2002, the CCTV survey (Setup 1) began at the outfall into Convair Lagoon at 12:50. Low tide was -1.2 feet and occurred at 13:20. The camera apparatus was able to survey 19.5 feet upstream of the outfall before the sediments were too deep for the camera to continue to move forward. Sediment depths of 10-12 inches stopped the movement of the camera and the survey. Heavy debris or sand was documented in the pipeline.

Next the crew moved up to manhole #5 at the beginning of the 60-inch storm drain pipeline on the former General Dynamics leasehold. The 60-inch pipeline started in a large vault and terminated at San Diego Bay. Documentation indicated that a 54-inch storm drain entered the vault from the west, a 36-inch entered from the east and a 36-inch entered from the northeast. The placement of the camera system required a permitted confined space entry by Affordable Pipeline Services. During the vault entry it was found that the 36-inch entering from the east was disconnected by the placement of a large concrete plug. Also, the survey of this portion of the pipeline was not performed because the camera system was unable to be placed into the 60-inch storm drain pipeline.

A six-inch thick concrete pad has been constructed in the bottom of the pipeline for a distance of 6 feet or greater and the camera system would have been damaged when it fell off the pad to survey further downstream.

On March 26, 2002, low tide was -1.3 feet and occurred at 13:57. The survey began at 12:30 at manhole #4 (Setup 2). This manhole is located on the former General Dynamics leasehold. Setup 2 surveyed the upstream pipeline section towards manhole #5 for a distance of 21.5 feet. During this setup, heavy silt was found in the pipeline. The setup was stopped because the sediments were too deep for the camera to continue.

The downstream survey (Setup 3) from manhole #4 towards manhole #3 was performed for a distance of44.5 feet. During this setup, moderate infiltration at two pipeline joints was documented. The setup was stopped when the sediments were too deep for the camera to continue.

The survey continued at manhole #2 (Setup 4) on the Airport Operations Area of the San Diego International Airport. The upstream survey from manhole #2 towards manhole #3 was performed for a distance of 252.8 feet. During this setup, light infiltration into the pipeline was documented at four pipeline joints. The setup was stopped when the sediments were too deep for the camera to continue.

The downstream survey from manhole #2 survey (Setup 5) towards the outfall, manhole #1, was performed for a distance of 550.6 feet. During this setup, debris and sedimentation were documented in the pipeline. The setup also documented four lateral service connections and four holes in the pipeline and shown as Attachment #8. The four lateral service connections were confirmed by documentation provided by the Port of San Diego. The setup was stopped when the sediments were too deep for the camera to continue.

On March 27, 2002, low tide was -1.2 feet and occurred at 14:32. TheCCTV survey began at manhole #3 (Setup 6) that is located on the Airport Operations Area of the San Diego International Airport. The upstream survey towards manhole #4 was conducted for a distance of 130.7 feet. During this setup siltation in the pipeline was documented. The setup was stopped because the sediments were to deep for the camera to continue.

The downstream survey (Setup 7) from manhole #3 towards manhole #2 was performed for a distance of 641.4 feet. During this setup, infiltration into the pipeline was documented at 20 pipeline joints. One five-inch longitudinal crack and some pipeline sedimentation were also documented. The setup was stopped when the sediments were too deep for the camera to continue.

2.5.3 Temporary Measures or Planned Actions

The City of San Diego will be repairing the four holes in the 60-inch storm drain pipeline found under the TDY Industries leasehold by July 31, 2002.

2.6 <u>2002 Convair Lagoon PCB Technical Report</u>

In 2002, the Port conducted sediment sampling within the SWCS on the former General Dynamics Lindbergh Field Plant (GD LFP), the Airport, and former TRA Sites in response to the 7 November 2001 request by the RWQCB for assistance in identifying potential origins of PCBs in Convair Lagoon pursuant to Water Code Section 13267.

Samples were collected at five locations on the GD LFP along the 60-inch SWCS, however no tributary catch basins were sampled. Sediment PCB concentrations ranged from non-detect ND<0.02 mg/kg to 0.61 mg/kg at the southern boundary of the former GD property (Appendix T, Table 2-4, Figure 2-3).

Three samples were collected from the 60-inch SWCS on the Airport property. The most upgradient sediment sample contained 0.24 mg/kg total PCBs, the middle sample contained 26.0 mg/kg, and the sample adjacent to the northern boundary of the former TRA property contained 1.46 mg/kg (Appendix T, Table 2-4; Figure 2-3).

Ten samples were collected from various locations along the 60-inch SWCS and Convair Lagoon outfall channel on the former TRA site, ranging in concentration from 0.10 mg/kg to 3.06 mg/kg total PCBs. One sample was collected at the most downgradient catch basin on the 30-inch East SWCS, which contained a concentration of 29.0 mg/kg (Appendix T, Table 2-4, Figure 2-3).

2.7 2002 Port Sampling Data

In June 2002, the Port submitted a solid sample for analysis from the Washington/PCH (Pacific Coast Highway) site with a result of 588 mg/kg of Aroclor 1260. There is no known report or description of the origin of this material. In July 2002 the Port submitted for analysis four solids samples, eight samples described as mud, and three liquid samples from the Washington/PCH site. Although there is no report or description of where on the site this material was generated, the “Solid” samples ranged in concentration from 3.5 mg/kg to 259 mg/kg, the “Mud” ranged in concentration from ND<0.02 mg/kg to 2,100 mg/kg, and the “Liquid” ranged in concentration from ND<0.5 ug/L to 24 ug/L. Laboratory reports and COCs are included in Appendix YY.

2.8 2003 Report on Storm Water Conveyance System Maintenance

This report was prepared for the Port in 2003 to summarize the results of storm water conveyance system maintenance activities conducted by Pacific Trans Environmental Services (PTES) in January 2003 at the former TRA Facility property. The following are excerpted directly from the report (with minor corrections to update the verb tense).

The information contained in this report supplements the information presented in the January 2002 report entitled *Convair Lagoon PCB Technical Report,* prepared by the Port.

2.9 2003 Report on Exterior Surface Material Sampling for PCBs

This report was prepared for the Port in 2003 to summarize PCB data collected from SWCS sediment samples, paint chip samples, and surface concrete samples (Appendix ZZ). The summary and conclusions of the report are as follows:

- Previous sediment sample data have indicated the presence of PCBs in sediments within onsite storm water catch basins that receive runoff exclusively from the Site. More recent paint chip sample data (February 2003) indicate the presence of PCBs in paint of onsite exterior building walls. This data suggested that there are continuing sources of PCBs transported to the onsite storm water conveyance system.

- Between May and June 2003, surface materials including surface sediments, concrete paving/flooring surfaces, and building paints, were collected at the Site. Surface sediment samples were analyzed to assess whether surface sediment that would have discharged into the catch basin contain PCBs. Surface concrete samples were analyzed to assess whether deterioration of the concrete paving surface may be a contributing source of PCB concentrations in the onsite surface sediments. Paint chip samples were analyzed to assess whether paint flaking off of the building onto the ground surface may be a contributing source of PCB concentrations in the onsite surface sediments.

- Total PCB concentrations in the surface sediment samples collected in May/June 2003 range from not detected (<0.033 mg/kg) to 237 mg/kg. Total PCB concentrations in surface concrete samples collected in June 2003 range from not detected (< 0.033 mg/kg) to 47 mg/kg, and total PCB concentrations in paint chip samples collected in June 2003 range from not detected (~0.033mg/kg) to 26 mg/kg.

- The detected total PCB concentrations were compared to a conservative, USEPA Region 9 developed health-based protection guideline and the RWQCB-established Convair Lagoon sand cap action level (ecological-based). A review of the total PCB concentrations indicate that several of the surface sediment, surface concrete, and paint chip sample results exceed the above-noted health-based protection guideline and the ecological-based protection criterion for PCBs.

- This data indicates that the concrete paving surface located at and in proximity to former onsite operations and onsite peeling of PCB-containing paints are both contributing sources of PCB concentrations to the onsite surface sediments.

- The locations historically containing elevated PCB concentrations in catch basin sediments coincide with the locations of onsite surface material samples containing elevated PCB concentrations. This data indicates that the elevated PCB concentrations in catch basin sediments originated from the Site.

- PCB concentrations in surface materials at the Site have been discharged to Convair Lagoon and possibly other locations within San Diego Bay. These discharges have likely resulted in the observance of elevated PCB concentrations on the Convair Lagoon sand cap during post-closure monitoring activities.

2.10 2004 Port Baseline Site-Wide Investigation

In 2003-2004 the Port conducted a Site investigation, which included significant soil, groundwater, and soil gas sampling across the site. This data was subsequently incorporated into the 2005 Site Characterization Report. The report also included an evaluation of historical site use and operations and a human health risk assessment. The risk assessment was superseded by the subsequent DTSC approved Site Wide Risk assessment (Geosyntec, 2005). The findings and conclusions from the report relevant to PCB impacts at the site are presented below. The full report is provided for reference in Appendix ZZ.

2.10.1 Findings and Conclusions

- Twenty-two onsite chemicals source locations for the impacted areas were identified at the Site. Chemicals impacting vadose zone soil are predominantly chlorinated and petroleum related VOCs. More limited impacts are associated with releases of hexavalent chromium and organic chemicals with higher molecular weights and lower subsurface mobility potential in soil (e.g. chemicals with relatively high organic carbon coefficients and relatively low water solubilities) such as PAHs, PCBs, higher carbon chain range petroleum hydrocarbons, and other metals. Impacts by VOCs in vadose zone soil have also resulted in the occurrence of detected VOC concentrations in surrounding soil gas. Impacts within vadose zone soil are generally limited in horizontal and vertical extent near the associated PEC locations (i.e., locations where the releases likely occurred). The relatively limited areas of vadose zone impacts are primarily due to the limited lateral movement of chemicals as they migrated downward through relatively porous vadose zone soil to the underlying shallow groundwater.

- The thickness of vadose zone soil across the Site is up to approximately 6 feet bgs. Thus, the water table is relatively shallow. As previously indicated, impacts to vadose zone soil are relatively localized in proximity to the PECs where the associated releases likely occurred. Chemicals with a relatively low subsurface mobility potential in soil (e.g. chemicals with relatively high organic carbon coefficients and relatively low water solubilities) generally do not appear to have impacted groundwater. The more significant soil impacts of VOCs and other relatively mobile chemicals, such as hexavalent chromium, have generally resulted in impacts to groundwater in proximity and down gradient of the source locations. Chemical concentrations in groundwater generally attenuate (decrease) with depth, with the exception of relatively water soluble chemicals. VOCs present in groundwater also contribute to the presence of VOCs in soil gas in vadose soil above the groundwater impact areas.

- Free product, as LNAPL, was encountered at only one boring location (direct-push location 0158-GW-16) within Building 158 and within groundwater monitoring well, MW-2 (associated with the Building 102 diesel UST removal activities). This monitoring well and the LNAPL were removed during Building 102 diesel UST removal activities. The LNAPL observed beneath Building 158 appears to be localized.

- Free product as DNAPL was not visually apparent during the baseline Site-wide investigation groundwater sampling activities, nor has DNAPL been reported during historical groundwater sampling activities at the Site. Groundwater concentrations of PCE exceeded 10 percent of the water solubility concentration for PCE at only one location. This PCE concentration detected in the shallow groundwater sample collected in proximity to the southwestern corner of Building 131 is indicative of the potential for the presence of free product as DNAPL.

- Regarding potential impact to San Diego Bay from soil impacted by petroleum hydrocarbons, comparison of the DEH-derived residual saturation capacity concentrations to the TPH concentrations detected in soil samples collected from and adjacent to the Site indicates that the detected TPH concentrations are less than their respective residual saturation capacity concentrations with the exception of soil samples collected from five borings from three general areas. Therefore, with the above-noted exceptions TPH concentrations detected in the soil samples collected from and adjacent to the Site do not pose a continued threat of LNAPL generation on the water table beneath the Site.

- A further assessment of potential impact to San Diego Bay from soil impacted by relatively immobile chemicals indicates that elevated concentrations of SVOCs, including PCBs and PAHs, and other metals (excluding hexavalent chromium) are present in few localized areas within the Site. Due to the limited vertical impacts of these chemicals in the soil column, and their low water solubility, it is unlikely that the detected concentrations of these chemicals in soil samples would pose a significant threat to San Diego Bay. This is further confirmed by the few areas exhibiting elevated concentrations of these chemicals in groundwater beneath the Site. Although PCBs were detected in soil and surface materials, they were detected in only four groundwater samples obtained from an area between Buildings 120 and 121, within the southeastern portion of the Site. PAHs were detected in groundwater at concentrations greater than the San Diego Bay Protection Criterion at only one location (southwest of Building 131). In addition, other metals (excluding hexavalent chromium) were detected in groundwater beneath the Site at concentrations greater than their respective San Diego Bay Protection Criterion at six boring locations. These metals concentrations do not appear to be indicative of extensive metals impacts to groundwater.

2.11 <u>2005 Site Characterization Report</u>

In 2005, extensive sampling of the on and off-site SWCS was completed. The pertinent sections of the Site Characterization report are directly incorporated below. The referenced tables and figures are included within Appendix B, and an electronic copy of the full report is located in Appendix ZZ.

2.11.1 Storm Water Conveyance System Sampling

Existing sediment, run-in sediment, and in-line sediment samples were collected from the SWCS. Results of this sampling are discussed in Sections 2.11.10 and 2.11.11.

2.11.1.1 Existing Sediment Sampling

Existing sediment refers to sediment that is present within the catch basin or directly within the storm drain. Samples were collected using a lab-cleaned polyurethane bottle or stainless steel spoon which was attached to a section of PVC pipe to eliminate the need for confined space entry. The sediment was then transferred to a stainless steel bowl and homogenized. The sample then was placed into an 8 oz glass sample jar with a stainless steel spoon. The locations and constituents analyzed are presented in Appendix B, Table 3-5 and Figure 3-3.

2.11.1.2 Run-In Sediment Sampling

Run-in sediment consists of sediment trapped on filter fabric or in the immediate vicinity of a storm drain inlet, such that it is characteristic of sediment flowing to a specific catch basin. Filter fabric existed in many onsite catch basins. These devices trap suspended sediment that would enter the catch basin during a rain event. The filter fabric was removed and the sediment retained on the filter fabric was transferred from the fabric into a stainless steel bowl using a stainless steel spoon. The sample was then placed into an 8-oz glass sample jar with a Teflon liner. At locations where insufficient sample was present on the filter fabric or where no fabric was installed, samples were collected from sediment which had accumulated around the edge of the grate. The locations of the catch basins and constituents sampled are presented in Appendix B, Table 3-5 and Figure 3-3.

2.11.1.3 In-Line Sediment Sampling

In-line sediment consists of sediment that is suspended in water flowing through the SWCS. In-line sediment samples were collected using a 50-micron mesh filter socks mounted in 3-foot sections of slotted 4-inch PVC, which were in turn installed in select offsite storm drains. The in-line sampling devices were removed from the storm drains and the sediment transferred from the filter sock using a stainless steel spoon into a stainless steel bowl. The sample was homogenized and placed into an 8-oz glass sample jar with a Teflon liner. Sample locations and the constituents that were analyzed are presented in Appendix B, Table 3-5 and Figure 3-3.

2.11.1.4 Video-Assisted Sediment Sampling

A rover-mounted video camera was used to survey selected lines across each of the parcels that contribute flow to the SWCS or directly to Convair Lagoon. This survey identified areas of significant sediment accumulation, locations of tributary connections, the condition of the line, and prospective subsequent sampling locations of interest. Remote sampling was performed, when possible, by a sampling cup attached to the camera rover. Specialized equipment, including hoist, ropes, and cables were provided by the subcontractor to lower the rover into the SWCS and subsequently remove it. Sample locations and the constituents that were analyzed are presented in Appendix B, Table 3-5 and Figure 3-3.

2.11.2 Invert Elevation Survey Methods

Invert elevations of the influent and effluent points inside select catch basins were surveyed using a Trimble RTK GPS and an Optical Station with a survey rod and prism in the following manner. The catch basin covers were removed and a telescoping survey rod was used to measure the invert to a point at ground surface. Then the point at ground surface was surveyed with a survey rod and prism and an Optical Station. The locations where the Optical Station was set were then surveyed with a Trimble RTK GPS unit to sub-centimeter accuracy.

2.11.3 Description of Other Potentially Relevant SWCS

In addition to the SWCS that drain directly to Convair Lagoon, there are many storm drains that flow into the East Harbor Island Basin (East Basin) that carry storm water flow from industrial areas like the airport and the former GD Harbor Drive site.

- **HD-7**: This storm drain, which originates on the GD Harbor Drive site, was reported to be contaminated with PCBs (>13,000 milligrams per kilogram (mg/Kg) in soil) when tested in 1987. The storm drain was subsequently removed in late 1988 (Brown and Caldwell, 1994). The storm drain outfall discharged to the East Basin.

- **GD-Harbor Drive Storm Drains:** Eleven storm drains originate on the GD Harbor Drive and discharge into the East Basin. These storm drains generally have very short runs (mostly less than 500 feet) and currently drain three rental car facilities.

- **48-inch Airport East Basin Drain:** This storm drain collects the vast majority of runoff for the industrial portions of the airport where commuter and larger aircraft are serviced. This storm drain discharges to the East Basin.

2.11.4 Tidal Influence on the SWCS

Three tidal surveys were previously conducted, two by TDY in 2002 and 2003 and one by the Port in 2004 (Geosyntec, 2002a; Shaw Environmental, 2003; H&A, 2004). These studies indicate that during periods of high tide, sea water flows past the northern boundary of the Site in the 60-inch and 54-inch storm drains. Invert elevations of selected catch basins and manhole access points were measured during this investigation to further refine the extent of tidal impacts both onsite and upgradient (Appendix B, Figure 6-2).

2.11.5 SWCS Invert Survey

Invert elevations were measured at selected catch basins and manhole access points along the following storm water conveyance systems:

- The eastern 30-inch storm drain (onsite);
- The 60-inch storm drain (General Dynamics, Airport, and onsite);
- The 54-inch storm drain (Airport and onsite); and
- The 30-inch western branch to the 54-inch storm drain (Airport and onsite).

Data indicate that the mean higher high water (MHHW) (2.78 feet MSL) does not reach the southern property boundary within the eastern 30-inch storm drain (Appendix B, Figure 6-2). Tidal influence along the 60-inch storm drain during the MHHW extends more than 3,000-feet north of the Site boundary, on to the GD Lindbergh Field property. The MHHW also extends approximately 1,300 feet north of the Site boundary along the 54-inch storm drain, and approximately 600 feet west of the Site boundary along the 18-inch western tributary to the 54-inch storm drain.

The mean lower low water (MLLW) (-2.94 feet MSL) in the 60-inch storm drain reaches approximately 1,700 feet north of the Site boundary into the southern portion of the GD Lindbergh Field property (Appendix B, Figure 3-2). The MLLW within the 54-inch storm drain extends to approximately the southern Site boundary. As such the 54-inch storm drain becomes dry beneath the Site during low tides.

2.11.6 Flow Analysis

The flow velocity of water in the 60-inch storm drain system during both rising and receding tides was measured at catch basins A-131 (north of Building 126) and A-133 (south of Building 120) on April 9, 2002. Ten measurements were taken over an eight hour period, five in each catch basin. The water velocity ranged from 0.09 to 0.47 feet per second (ft/s). The maximum measured velocity during incoming tide was 0.3 ft/s, measured at 7:00 am in A-133 approximately 1.5 hours before high tide. The maximum measured velocity during the receding tide was 0.47 ft/s measured at 12:40 PM in A-131, approximately 2 hours before low tide (Geosyntec, 2002a).

Published literature states that the typical water velocity required to mobilize sediments ranging in size from 0.001 to 100 millimeters is a minimum of 0.7 to 2.9 ft/sec (Schwab and Prothero, 1996; Julian 1998), approximately two to ten times higher than the maximum incoming tidal flow velocity measured in the 60-inch storm drain system on April 9, 2002 (Geosyntec, 2002a). Grain size data collected from samples along the

60-inch line indicate that approximately 45 percent of sediment is sand-sized or larger, 50 percent is fine sand, and 5 percent is silt or finer. While fine sediment suspended in the water column may be transported under low-velocity conditions, it appears unlikely that significant volumes of sediment could be re-mobilized and transported upgradient of the Site based on observed site conditions.

2.11.7 On-Site SWCS Video Survey

A submersible, track-mounted camera was deployed in the 30-inch west tributary to the 54-inch storm drain, the 54-inch storm drain, the 60-inch storm drain, and the east 30-inch storm drain to record the amount of sediment within the storm drain, condition of the pipe, and evidence of potential for Site impacts to leak into the SWCS. A brief summary of findings associated with these inspections is presented below. The full video and Survey reports are included in Appendix G of the full version of the Storm Drain Cleanout Report (Geosyntec, 2007).

National Plant Services was retained to perform on-site storm drain inspections. On September 30, 2005, the following storm drains were inspected:

Storm Drain System	Access Point	Direction	Total Distance (ft)	DVD
East branch of 54”	A-20	West	365	6
East branch of 54”	A-20	East to A-63	490	6
54”	A-63	North	558	6
54”	A-63	Southeast to lagoon	551	7

The following storm drains were inspected on October 3, 2005:

Storm Drain System	Access Point	Direction	Total Distance (ft)	DVD
60”	A-133	South	161	8
60”	A-133	North	606	8
30” East	A-154	North to A-152	115	8
30” East	A-154	Southeast to A-155	40	8
30” East	A-155	Southeast to A-201	41	8
30” East	A-161	West to A-201	105	8
30” East	A-201	Southwest to lagoon	60	8

Most of the storm drains were constructed with concrete, except for pipes connecting to A-154 and A-155 which were apparently constructed with PVC. The overall condition of the concrete or PVC in each pipe appeared to be sound. There were no obvious structural failures for the sections of storm drain which were inspected. However, visibility was generally limited due to floating organic matter in the tidally influenced sections of drain along the 54-inch and 60-inch SWCS.

For concrete pipes, pipe seams generally occurred every 5 to 8 feet. Pipe seams generally occurred every 20 feet in the PVC pipes associated with the 30-inch east storm drain. Overall, the pipe seams appeared to be in good condition. One crack was observed in the abandoned section of storm drain connecting into the east branch of the 54-inch storm drain towards abandoned catch basin A-21, bearing south. The crack was at the base of the pipe intruding into the storm drain approximately 146 feet east of catch basin A-20. Approximately 25 feet east of this connection, another abandoned storm drain line, which serviced A-22 before it was abandoned, connects into the 30-inch tributary to the 54-inch storm drain. This abandoned storm drain has apparently old sediment caked to its walls.

Sediment has collected in all of the inspected storm drains except for the storm drain leading from manhole A-201 to the Convair Lagoon which only had trace amounts of sediment. The other pipes contained accumulated sediment and debris as much as 12 to 15 inches wide and several inches deep. In general, the 54-inch and 60-inch storm drain network had greater sediment build up than the 30-inch storm drain network.

2.11.8 Off-Site SWCS Video Survey

A submersible, track-mounted camera was deployed in the following off-site storm drains to inspect the general condition of the storm drain, note sediment accumulation, and collect discreet sediment samples, where possible.

Storm Drain System	Access Point	Direction	Total Distance (ft)	DVD
16” east branch of 54”	B-24	East	487	9*
18” east branch of 54”	B-22	North	498	9*
54”	catch basin northeast of B-2	Southwest	106	9*
54”	B-2	North	229	10*
54”	B-2	Southeast	576	10*
54”	B-3	South	408	10*
60”	D-12	Northwest	223	10*
18” east branch of 54”	C-2	East to B-24	198	1
54”	B-3-MH200	South	718	2
60”	B-8	South	0.6	2

16” east branch of 54”	B-23-15N	North to B-20	417	3
16” east branch of 54”	B-23-242N	South	70	3
60”	B-11	North to B-8	67	4
60”	D-7	East to D-8	11	5
60”	D-13-MH842	North to D-8	132	5
60”	D-13-MH842	South	160	5

*Performed by Everest VIT in March/2005

All inspected storm drains were constructed with concrete. Seams generally occurred every 5 to 8 feet. Overall, the seams appeared to be in fair condition, with some erosion and minor chipping. The condition of the concrete could not be determined in the inspections from manholes B-11 and D-13-MH842. Flooded conditions in these lines severely limited visibility due to floating organic matter and debris. The inspection at B-8 and D-7 were terminated a short distance from the entrance point due to obstruction of the storm drain by debris and cemented sediment. Large pieces of debris were visible in the pipe leading from B-8.

The 16-inch north-south tributary to the 54-inch storm drain was in the worst condition of the inspected storm drains. Cracks were visible on both sides of the pipe for the majority of the inspected length, and the top of the storm drain had collapsed leaving the rebar exposed 315 feet north of catch basin B-22. Cracks also occurred approximately 267 to 271 feet north of manhole B-23-15N in the 16-inch tributary to the 54-inch storm drain network. Overall, the concrete in the remaining storm drains appeared to be in fair condition with a few thin cracks. A hole in the concrete was found approximately 85 feet east of C-2 on the north side of the storm drain and had a diameter of approximately 8 inches. Due to the angle of the camera, it was not determined if the hole was sealed off or connected to an intruding pipe. What appeared to be a large hole was discovered in the base of the 60-inch storm drain approximately 67 feet north of manhole B-11. Due to the poor visibility underwater, the full extent of the hole was not able to be determined. Post cleanout video obtained following storm drain cleanout activities showed no compromises in the integrity of the 60-inch storm drain at this location. The hole previously documented in the bottom of the drain may have been only a depression in the thick sediment which had previously accumulated at the base of the storm drain.

Intruding pipes were found in the investigations leading from manholes B-24 and B-3-MH200. The seals around the intruding pipes did not appear to be in good condition, and may represent abandoned storm drain lines.

Small amounts of sediment were found in the northern portion of the 54-inch storm drain, and the small 16-inch tributary to 54-inch storm drain that runs north/south in front of the commuter terminal. Thick layers of sediment were present in 12 to 36 inch strips along the base of the 18-inch tributary to the 50-inch storm drain running east/west in front of the commuter terminal and throughout the 60-inch storm drain. The rover was used to collect sediment samples in a cup from the north/south and east/west tributaries to the 54-inch storm drain in front of the commuter terminal.

The portion of the 60-inch storm drain leading from catch basin D-7 had the largest amount of observed sediment. The sediment had collected in the base of the storm drain and appeared to be several inches thick and approximately 30 inches wide with piles of cemented sediment several feet long and 15 inches high. The rover was only able to investigate 11 feet into the storm drain due to these obstructions.

2.11.9 Sediment Sampling Methods

Run-in, existing, and in-line sediment samples were collected during the 2005 site characterization.

- **Run-in samples** were collected from either A) sediment which had been trapped on filter-fabric or in silt-sacks installed in a catch basin, B) sediment trapped in the groove around the catch basin grate, or C) sediment in the base of a catch basin (only if there was insufficient sediment of type A or B, the catch basin was the most upgradient catch basin on the drain line, and there was no tidal influence on the catch basin). This sample type is intended to represent sediment in the immediate vicinity of the catch basin from which it was collected.

- **Existing samples** were collected from the base of a catch basin or directly from the storm drain itself. These samples represent the cumulative sediment from all upgradient contributions.

- **In-line samples** were collected from a fine-mesh filter sock supported by a 4-inch slotted PVC pipe. The filter sock is placed into the center of the storm drain and is used to collect a representative sample of suspended sediment from flowing water within the SWCS. These samples represent the mobile sediment entrained within the SWCS discharge.

Full lab reports are presented in the 2005 Site Characterization Report (Appendix ZZ).

2.11.10 Upgradient PCB Impacts

Sediment was sampled along the 60-inch and 54-inch lines and their tributaries during site characterization field activities in 2005. Data collected from the 2005 onsite and offsite SWCS characterization study is presented in Appendix B, Tables 7-1 through 7-3. Storm drain sample data collected during the 2005 site characterization field activities on properties contributing storm water to the Convair Lagoon is presented in Appendix B, Figures 7-1 through 7-6.

2.11.10.1 PCBs on the San Diego International Airport

Sediment samples were collected and analyzed for PCBs in four principal drainage areas on the Airport property (Appendix B, Figure 7-1).

- Catch basins leading to the 48-inch East Basin Drain;
- Catch basins leading to the western 30-inch tributary to the 54-inch storm drain;
- Catch basins leading to the 54-inch storm drain; and
- Catch basins leading to the 60-inch storm drain.

2.11.10.2 48-inch East Basin Storm Drain

Three existing sediment samples and one in-line sample were collected from the 48-inch East Basin drain line. No PCBs were detected in these samples.

2.11.10.3 30-inch West Tributary of 54-inch Storm Drain

Seven existing, two in-line, and two run-in samples were collected on the 30-inch tributary to the 54-inch storm drain. PCBs were detected in five of the seven existing sediment samples at concentrations ranging from non-detect to 1.6 mg/kg. PCBs were detected in both of the in-line sediment samples at concentrations of 0.13 mg/kg and 0.16 mg/kg, respectively. PCBs were detected in one of the two run-in samples collected from this segment of storm drain, at a concentration of 0.25 mg/kg.

2.11.10.4 54-inch Storm Drain

Four existing and seven run-in samples were collected from the 54-inch storm drain and its tributaries. PCBs were not detected in the four existing sediment samples from this portion of the SWCS. One of the seven run-in samples contained detectable PCBs at a concentration of 0.011 mg/kg.

2.11.10.5 60-inch Storm Drain

Six run-in, two existing, and one in-line sample were collected from storm drains contributing the 60-inch storm drain. PCBs were detected in one of the two existing sediment samples at a concentration of 0.24 mg/kg. PCBs were detected in five of the six run-in samples with concentrations ranging from 0.055 mg/kg to 0.23 mg/kg. PCBs were detected in the one in-line sample collected at a concentration of 7.98 mg/Kg.

2.11.10.6 PCB Impacts on the Former General Dynamics-Lindbergh Field Facility

Three run-in and 16 existing sediment samples were collected from catch basins contributing to the 60-inch storm drain. PCBs were detected in all samples collected on the former GD facility. PCB concentrations ranged from 0.084 mg/kg to 1.64 mg/kg in the three run-in samples. The 16 existing sediment samples collected in 2005 contained PCB concentrations ranging from 0.061 mg/kg to 3.20 mg/kg (Appendix B, Figure 7-2). Two in-line samples were collected during post-Site Characterization Report sampling activities in April 2006. Both in-line sediment samples contained PCBs at concentrations ranging from 5.7 mg/kg to 9.54 mg/kg (Appendix L, Table 1, Figure 1).

2.11.10.7 PCB Impacts Upgradient of General Dynamics-Lindbergh Field Facility

Five existing, one run-in and four in-line samples were collected in 7 catch basins upgradient of the Former General Dynamics Facility which eventually contribute to the 60-inch storm drain. PCBs were detected in one existing sediment sample at a concentration of 0.026 mg/Kg (Appendix B, Figure 7-3). During post-Site Characterization Report sampling activities in March 2006, existing and run-in sediment samples were collected from two catch basins on the MCRD. PCBs were detected in one of the run-in samples at a concentration of 0.019 mg/kg and in both of the existing sediment samples with concentrations of 1.02 mg/kg and 1.74 mg/kg, respectively. In April 2006, in-line sediment samples from the same two catch basins on MCRD contained PCB concentrations of 0.49 mg/kg and 0.47 mg/kg, respectively. In May 2006, one existing sediment sample and one in-line sample were collected from the Washington Street tributary to the 60-inch SWCS. No PCBs were detected in these samples. (Appendix L, Table 1, Figure 1).

2.11.10.8 PCB Impacts on the former Sky Chefs Facility

Two existing sediment samples were collected from storm drains on the former Sky Chefs Facility, adjacent to the western Site boundary. PCBs were detected in one of the two samples with a concentration of 0.034 mg/Kg. These storm drains contribute to the 48-inch storm drain to the East Basin (Appendix B, Figure 7-4).

2.11.10.9 PCB Impacts on the Former General Dynamics Harbor Drive Plant

Five existing and five run-in sediment samples were collected from storm drains on the former General Dynamics Harbor Drive site. In addition to SWCS lines that drain directly to Convair Lagoon, there are many local storm drain that discharge into the East Harbor Island Basin (East Basin) that carry storm water flow from industrial areas like the airport and the former GD Harbor Drive (Appendix B, Figure 7-5). Some of these storm drains that contained PCBs historically as described below.

- **GD-Harbor Drive Storm Drains:** These lines all originate on the former GD Harbor Drive Facility and discharge into East Basin. Any PCB discharges from these lines would enter the East Basin on the southern edge of the GD Harbor Drive facility, and discharge into the mouth of Convair Lagoon. All of the sediment samples collected from the lines during 1986 and 1987 contained PCBs at concentrations up to 6.6 mg/Kg. Four of the nine existing sediment samples collected during the 2005 site characterization contained detectable PCBs with concentrations ranging from 0.033 mg/kg to 0.064 mg/kg.

- **HD-7:** This storm drain, which originates on the GD Harbor Drive site, was reported to be contaminated with PCBs (>13,000 mg/Kg in soil) when tested in 1987. The storm drain was subsequently removed and replaced in late 1988 (Brown and Caldwell, 1994). The storm drain discharged into the East Basin and would have contributed PCB contaminated material to the mouth of and into Convair Lagoon. Other testing in 1986 and 1987 showed consistent PCB contamination of catch basin sediment along the line from 33 mg/Kg to 130 mg/Kg with an increasing trend over three sampling events (Brown and Caldwell, 1992). The existing sample from this storm drain in 2005 contained a PCB concentration of 0.033 mg/kg.

- **48-inch Airport East Basin Drain**: This line drains the vast majority of the industrial portions of the airport where commuter and larger aircrafts are serviced. Documented VOC contamination exists in these areas which may mobilize PCBs into the SWCS. Given the position of the outfall location, PCB contaminated material from the East Basin would travel to the mouth of and into Convair Lagoon. One existing sediment sample collected during the 2005 site characterization contained a PCBs concentration of 0.020 mg/kg total PCBs.

2.11.11 Onsite PCB Impacts

The PCB data collected for the Site over the past 18 years is extensive and comprehensive. In summary, a total of 15 PCB usage areas were identified at the Site (Appendix B, Figure 5-4). All PCB containing materials at these locations were removed by 1990 (Geosyntec, 2002a, Appendix ZZ). No known PCB source areas remain on the Site; however, areas with elevated concentrations of PCBs in surface sediment are indicated by recent sampling.

Results from the 2005 site characterization have been compiled in Appendix B, Table 7-1. The full lab reports from the 2005 site characterization activities are included electronically with the full version of the report in Appendix ZZ.

Site-wide characterization of sediment in or immediately adjacent to the SWCS during 2005 indicated PCBs were detected in ten of twelve existing sediment samples collected from within the SWCS and in all fifteen run-in sediment samples collected in or around onsite catch basin inlets as described below (Appendix B, Figure 7-6).

2.11.11.1 54- Inch Storm Drain and Tributaries

The five run-in samples from tributaries to the 54-inch SWCS contained PCBs with concentrations ranging from 0.167 mg/kg to 60.0 mg/kg. The highest concentrations were located on tributaries in the vicinity of Building 157 (Appendix B, Figure 7-6). One of two existing sediment samples from tributaries to the 54-inch SWCS contained detectable PCBs at a concentration of 0.044 mg/kg. In June of 2006 a sediment sample was collected from the end of the 30-inch storm drain which enters the 54-inch SWCS from the west at CB-63. This sample contained 44.0 mg/kg PCBs (Appendix O, Figure 1).

2.11.11.2 60-Inch Storm Drain and Tributaries

In 2005, PCBs were detected in two of three existing sediment samples within the 60-inch SWCS and tributaries at concentrations ranging from 3.29 mg/kg to 25.4 mg/kg (Appendix B, Figure 7-6). Run-in sediment samples contained PCBs in all eight sample locations at concentrations ranging from 0.1 mg/kg to 380 mg/Kg at catch basin 132.

2.11.11.3 30-Inch East Storm Drain

PCBs were detected in each of three existing sediment samples within the east 30-inch storm drain at concentrations ranching from 0.56 mg/kg to 52 mg/Kg (A-201). PCBs were also detected in one run-in sample at a concentration of 14.9 mg/Kg (A-144) (Appendix B, Figure 7-6)).

2.11.11.4 18-Inch Storm Drain to San Diego Bay

PCBs were detected in one existing sediment sample with a concentration of 0.41 mg/Kg in the 18-inch storm drain to San Diego Bay.

2.11.11.5 30-Inch Storm Drain to San Diego Bay

PCBs were detected in two existing sediment samples within the 30-inch storm drain to San Diego Bay at concentrations of 21.7 mg/Kg (A-172) and 5.2 mg/Kg (A-173). PCBs were also detected in one run-in sample southeast of Building 161 at a concentration of 2.89 mg/Kg (Appendix B, Figure 7-6).

2.11.12 PCB Impacts in Convair Lagoon

Six sediment samples (L-1 through L-6) were collected within Convair Lagoon and analyzed for PCBs (Appendix B, Table 7-1 and Appendix B, Figure 7-6). PCBs were detected in five of the six Convair Lagoon sediment samples which were collected. Samples L-5 and L-1 contained total PCB concentrations of 11.07 mg/Kg and 23.6 mg/Kg, respectively. These samples were collected from the area in front of the discharge from the 60-inch storm drain. Samples collected immediately east and west of the 60-inch SWCS outfall contained PCB concentrations of 0.337 mg/kg and 0.32 mg/kg, respectively (Appendix B, Figure 7-6). No PCBs were detected at the outfall to the eastern 30-inch storm drain. A sediment sample collected in the vicinity of the 54-inch and western 30-inch outfall contained a PCB concentration of 0.612 mg/Kg (Appendix B, Table 7-2).

2.11.13 Extent of PCBs in Soil

PCBs were sampled in soil during the 2003 site assessment performed by the Port (H&A, 2004). Of the 250 locations sampled, 47 contained detectable concentrations of PCBs. The most commonly detected PCB was Aroclor 1260, followed by Aroclor 1254 and Aroclor 1248. These results are presented on Appendix B, Figures 7S-33 and 7S-34. In addition to these samples, there are known residual PCB impacts in the vicinity of the 30-inch East SWCS, based on the storm drain removal report as described in

Section 3.1 (ERC, 1998). In summary, PCBs were detected in soil in the following areas:

- Explosives area (up to 1.5 mg/kg);
- Building 156 area (up to 290 mg/kg);
- West of Building 120 (up to 1.39 mg/kg);
- Building 222/228 Area (up to 1.63 mg/kg);
- North of Building 130 (up to 0.059 mg/kg);
- North and West of Building 161 (up to 0.33 mg/kg);
- Building 166 (up to 0.133 mg/kg);
- South of Building 180/181 (up to 1.8 mg/kg);
- South of Building 121 (up to 1.97 mg/kg); and
- Soils along the 30-inch East SWCS corridor (up to 23 mg/kg).

Based on data collected from borings surrounding these areas, the extent of PCBs in soil has been adequately defined; however, because historical sampling in the vicinity of the 30-inch SWCS was focused on delineation and removal of soil with total PCB concentrations greater than 50 mg/kg, additional sampling may be required in this area to define the extent of remedial actions required to meet remedial goals.

2.11.14 Extent of PCBs in Groundwater

During the 2003 site assessment, the Port analyzed 43 groundwater samples for PCBs. These samples were analyzed as total PCB concentrations which were unfiltered and included any PCBs which may have been attached to suspended particulate matter. Two of these samples contained detectable PCBs at concentrations of 0.0011 and 0.0019 mg/L, respectively (Appendix B, Figure 7G-20). Both samples were collected at a location immediately south of Building 120. Because these samples were unfiltered, they were not clearly indicative of PCB impacts to groundwater and were initially added as a separate AOPC. Additional sampling was conducted at monitor wells B120-MW2 and B120-MW3 during the 1st and 3rd quarter semiannual sampling in 2009. Dissolved PCB concentrations were identified in groundwater up to a concentration of 0.029 mg/L. Site-wide PCB groundwater samples collected in 2010 showed the only well with detectable PCBs in groundwater was B120-MW2.

2.11.15 Upgradient Portions of the Storm Water Conveyance System

PCBs have been detected both on site and in upgradient areas which contribute to the SWCS servicing the Site. There are many potential sources for PCBs in the commercial and industrial facilities surrounding the Site. PCBs were sampled in sediment from catch basins, filter fabrics, and in-line sample collectors across the Site, and in many offsite locations contributing to the ultimate discharge of storm water to Convair Lagoon. Onsite PCB concentrations were detected in the 60-inch storm drain, the east 30-inch storm drain, and tributaries to the 54-inch storm drain. PCB concentrations ranged from non-detect (i.e., less than approximately 0.01 mg/kg) to 380 mg/Kg. Off-site, elevated PCB concentrations were detected in catch basins contributing to the 60-inch storm drain. PCB concentrations ranged from non-detect (i.e., less than approximately 0.010 mg/kg) to 9.54 mg/Kg.

2.12 <u>Ambient PCB Concentrations</u>

Three reports containing information on ambient concentrations of PCBs in environmental media were identified. The relevant information is summarized below.

2.12.1 Risk Assessment of Polychlorinated Biphenyls at Hazardous Waste Sites

This paper discusses, among other things, the "near ubiquitous ambient low level presence of PCBs in environmental media including air, soil, and food." (DTSC, 2003). Ranges of ambient PCB concentrations are reported for the following media:

- *Air: Typical concentrations range from 0.1 to 3 ng/m^3. Levels are declining. Urban areas have higher levels. Indoor levels may be higher than outdoors.*

- *Water: Despite low solubility, PCBs are widespread in water bodies. Typical levels of PCBs in the ocean and the Great Lakes are 0.02 to 0.6 ng/L.*

- *Storm Water: Runoff and rainwater are commonly contaminated with PCBs. Rainwater concentrations from 1980 – 1990 were in the range of 0.1 to 20 ng/L.*

- *Food: PCBs have been reported in many foods, most notably fish. A study in San Francisco Bay reported median values in seven fish species ranging between 13-306 ng/g of wet tissue with one species non-detect.*

2.12.2 Joint Stormwater Agency Project to Study Urban Sources of Mercury, PCBs, and Organochlorine Pesticides

This report was prepared as a collaborative project between six storm water pollution prevention programs and sewer districts surrounding San Francisco Bay to document the presence and distribution of contaminants of concern in sediments collected from storm drains. A two year data set of sampling of numerous sites in Marin, San Mateo, Santa Clara Valley, Contra Costa, and Solano counties was combined with data provided by the Alameda Countywide Clean Water Program and sites from separate PCB case studies, resulting in 164 sampling units for PCBs consisting of 68 industrial sites, 31 residential/commercial sites, 44 mixed land use sites and 21 open space sites (Kinnetic, 2001).

The 50th percentile PCB concentration for storm drain sediment was calculated for industrial, residential/commercial, mixed, and open space areas. The 50th percentile concentration for storm drain sediment from industrial areas was 445 ug/kg. Residential/commercial areas had a similar concentration of 431 ug/kg. Mixed use (blended industrial, commercial, and residential) areas had a 50th percentile concentration of 89.1 ug/kg and open space areas had a concentration of 1.16 ug/kg (Kinnetic, 2001).

2.12.3 IPCS International Programme on Chemical Safety Health and Safety Guide No. 68, PCBs and PCTs.

This document is a summary of the effects on the environment and on human health of exposure to PCBs and PCTs (Polychlorinated Terphenyls), as understood by the World Health Organization in 1992. Among other conclusions, this report states that the concentrations of PCBs in precipitation range from 0.001 to 0.25 ug/L, while concentrations in air range from 0.002 to 15 ng/m^3 (WHO, 1992).

3. HISTORICAL PCB REMOVAL ACTIVITIES

There have been numerous activities implemented at the Site and in upgradient portions of the 60-inch SWCS to remove PCB impacted materials. These include removal of PCB containing capacitors and transformers, sediment cleanout from storm drains and catch basins, SWCS removal and replacement, targeted excavations, and site sweeping activities. These removal efforts are summarized for each storm drain individually and detailed below as discussed in the related summary reports.

- 1982-1990 Removal of PCB containing materials, transformers, and capacitors;
- October 1986 - Storm Drain Sediment Removal and Catch Basin Sediment Sampling in the 30-East SWCS;
- October 1988 - 15/30 Storm Drain System Removal and Replacement;
- 1997 General Dynamics (GD) SWCS Cleanout;
- 2004 GD SWCS Cleanout;
- 2006 SWCS Cleanout;
- 2007 SWCS Cleanout; and
- Site Sweeping Results.

54-Inch SWCS

Sediment sampled in the 54-inch SWCS historically contained PCB concentrations as high as 450 mg/kg in samples collected in 1987. Sediment was cleaned out of targeted catch basins along the 54-inch SWCS in 1986, 1987, 1991, 2003, and out of the majority of the 54-Inch SWCS in 2006. There is significantly less accumulation of sediment in the 54-Inch SWCS, as compared with the 60-Inch SWCS, due to its greater slope.

30-Inch West SWCS

This storm drain only serves a small portion of the parking area adjacent to North Harbor Drive, south of Building 102. A sample collected in 2005 contained 1.3 mg/kg PCBs. Sediment was cleaned out of all of the 30-Inch West SWCS in 2006.

60-Inch SWCS

The 60-inch SWCS has historically contained significant concentrations of PCB impacts. In 1986 PCB concentrations up to 4,300 mg/kg were identified in on-site sediment and targeted catch basins were cleaned. Additional catch basin tributaries were cleaned in 1989, and the on-site portion of the main 60-inch SWCS trunk line was cleaned in 1996 prior to the capping of Convair Lagoon. In 1997 360 mg/kg PCBs were recorded on the upstream portions of the 60" SWCS and General Dynamics cleaned the storm drain from the northern GD property line to the northern TDY property line. In January 2003, sediment was removed from many on-site catch basins. The 60-inch storm drain on the GD property was again cleaned out in 2004 following further PCB detections in the GD portion of the SWCS. The majority of the 60-Inch SWCS, including on and off-site tributaries was cleaned in 2006, with targeted on-site re-cleaning in 2007. These cleanouts were followed by the diversion and filtering of two on-site 60-inch SWCS tributaries which exhibited continued elevated PCB impacts in February 2007 and May 2008.

30-Inch East SWCS

The 30-Inch East SWCS has historically had the highest PCB concentrations in sediment on-site, up to 26,000 mg/kg. In 1986, a sediment sample from the 30-inch East SWCS contained approximately 1,400 mg/kg total PCBs. The storm drain was subsequently cleaned in 1986. In 1996 the SWCS was again cleaned from the property line to the Convair Lagoon outfall prior to installing the Convair Lagoon cap, and fully excavated and replaced in 1998. In 2005, concentrations up to 52 mg/kg were detected in the storm drain, and all sediment was removed from this storm drain during the 2006 storm drain cleanouts.

30-Inch Storm Drain to San Diego Bay

The 30-inch SWCS to San Diego Bay had detections of approximately 53 mg/kg in 1986. In 2005 the highest recorded concentration was approximately 22 mg/kg. The sediment was removed from the majority of this SWCS during the 2006 storm drain cleanouts.

18-Inch Storm Drain to San Diego Bay

This SWCS is comprised of five catch basin inlets which drain the area south of Buildings 180, 181, and 183. A sediment sample was collected from CB-181 in August 2005 with a concentration of 0.41 mg/kg. A sample was collected from CB-182 in May

2006, with a concentration of 0.78 mg/kg. Although attempts were made to collect sediment from CB-187, insufficient sediment was present to collect a sample. No cleanout activities are documented within this portion of the storm drain system.

3.1 Storm Drain Sediment Removal and Catch Basin Sediment Sampling in the 30-Inch East SWCS

The Regional Board issued Cleanup and Abatement Order 86-92 on 17 October 1986, and amended and modified the order on 20 October 1986. It required that TRA remove sediment from catch basins and interconnecting lines in the TRA15/30 system, remove sediment from specific basins, and sample sediment in other specified basins in other drainage systems serving TRA property prior to 1 November 1986. These actions are described in the excerpt below. The full report is included in Appendix ZZ.

3.1.1 Cleaning and Sediment Removal Activities

TRA personnel, WESTEC Services, Inc. (WESTEC) personnel, and personnel from Waste Control Services, Inc. (WCS) subsequently mobilized to carry out the requirements of the order. The work was performed on Wednesday, 22 October; Thursday, 23 October; Friday, 24 October; Saturday, 25 October; Sunday, 26 October; Monday, 27 October; and Tuesday, 28 October; and completed on Wednesday, 29 October. All work was completed by the 1 November deadline specified by the Regional Board and to the satisfaction of the representatives of the Regional Board. This assertion was confirmed at the completion of each of the activities stipulated in the Cleanup and Abatement Order by questioning the Regional Board representative and eliciting his approval of each completed step.

The work commenced with removal of sediment from catch basins in the TRA15/30 system. During the first two days of cleaning, WESTEC, WCS, and Regional Board personnel noted that the interconnecting lines between catch basins in this system were very flat, had very little fall between basins, and contained a large volume of sediment. Some of the interconnecting section appeared to have sediment in approximately half of the pipe bore. Once the volume of sediment had been noted, WESTEC and WCS personnel discussed the findings and determined that the steam cleaning methodology proposed for the interconnecting lines would not be adequate to transport the encountered volume of sediment from each catch basin to the next. Accordingly, TRA proposed in a letter dated 23 October 1986 to Landin H. Delaney of the Regional Board that the allowable method for interconnecting line cleaning be modified. TRA received approval to remove the encountered sediment by the use of low-pressure/low-volume water flow. After the gross sediment had been removed from the interconnecting lines, TRA proposed to continue the line cleaning as originally envisioned and ordered. Once this method had been instituted for line cleaning in the TRA15/30 storm drain, there were no difficulties encountered.

3.1.2 Sample Collection Activities

The Regional Board's Cleanup and Abatement Order 86-92 stipulated that samples of sediment be collected from all catch basins connected to the TRA15/30 storm drain and from other representative catch basins at the site. Whereas the order stipulated that the sediment in the catch basins of the TRA15/30 system had to be sampled prior to removal of sediment, an agreement was reached between Pat Cafferty, TRA's outside counsel, and David Barker of the Regional Board on 21 October 1986. This agreement stipulated that in situ sediment sampling would take place in any catch basin connected to the TRA15/30 system if a depth of sediment equal to or greater than six inches (6") was encountered. In order to make this determination, Robert Horner of WESTEC and Brian Kelley of the Regional Board inspected each affected catch basin in the TRA15/30 storm drain system on 21 October 1986 between 5:00 and 5:40 p.m. None of the catch basins was found to contain more than four inches (4") of sediment. It was therefore agreed that in situ sampling of sediments in this system would not take place. Samples of sediment removed from each basin would, however, be collected.

For every sample collected on TRA property, a total of four duplicates were prepared. Two duplicates were provided for personnel from the RWQCB. The RWQCB required two separate sample jars since separate laboratories would perform heavy metals and PCB analyses. The third duplicate was prepared for storage as physical evidence at Analytical Technologies, Inc. (ATI). The fourth duplicate was prepared for WESTEC personnel who would submit this sample for analysis at ATI.

Samples of sediment from all of the catch basins stipulated in the Cleanup and Abatement Order were collected on 22, 23, 24, 25, and 27 October 1986. Only one sample was collected on 25 October 1986. An attempt was made to sample catch basin number 133 on 24 October by Colin Young and Scott Hugenberger, but the basin is under tidal influence and the bottom portion of the basin was under water when the attempt was made. Accordingly, a sample was collected from this basin by Frank Kingery and Brian Kelley at 2:30 P.M. on Saturday, 25 October 1986. Aside from the interference caused by tidal influence on basin number 133, storm drain sediment sampling activities took place in accordance with Cleanup and Abatement Order 86-92.

Appendix V, Tables 3-1 and 3-2 provide summaries of the samples collected from catch basins on TRA property during Cleanup and Abatement Order 86-92 compliance activities. Reported sediment concentrations in the 15/30 SWCS catch basins ranged from 1.6 mg/kg to 1,400 mg/kg comprised primarily of Aroclor 1248. Reported sediment concentrations in the 54-inch SWCS catch basis ranged from non-detect (<1.0 mg/kg) to 130 mg/kg, comprised primarily of Aroclor 1254. Reported sediment concentrations in the 60-inch SWCS catch basins ranged from non-detect (<1.0 mg/kg) to 4,300 mg/kg comprised primarily of Aroclor 1260. Reported sediment concentrations from the 30-inch to SD Bay Catch Basins ranged from non-detect (<1.0 mg/kg) to 53 mg/kg, comprised primarily of Aroclor 1248. The complete report is presented in Appendix ZZ.

3.2 Technical Report – 15/30 Storm Drain System Removal and Replacement

From October 1988 through January 1989, Teledyne Ryan Aeronautical (TRA) removed an existing 15" storm drain system (known as the "15/30 storm drain system") within their facility, and replaced it with a new 18" storm drain system. As part of this project, original concrete catch basins and concrete drain pipes were removed, while new concrete catch basins and PVC pipes were installed.

Sampling performed between 1986 and 1988 had revealed elevated concentrations of polychlorinated biphenyls (PCBs) within the 15/30 storm drain system. As part of the project, TRA retained ERC Environmental and Energy Services Company (ERCE), formerly WESTEC Services, to evaluate the potential for soil contamination around the 15/30 storm drain system.

A concentration of 50 milligrams per kilogram (mg/kg) PCBs in soil (on a wet weight basis) was used as the criterion for deciding whether soil was significantly contaminated. This concentration represents the minimum concentration at which wastes contaminated with PCBs are defined by the State of California as hazardous wastes.

Four main clusters of PCB-contaminated soil samples were found: at a buried catch basin near Harbor Drive, beneath and between basins 151 and 152, in the vicinity of basins 149 and 150, and beneath basin 145. PCB concentrations greater than 50 mg/kg were also discovered in several other isolated samples. In locations where PCB concentrations in samples were greater than 50 mg/kg, soil was excavated to a depth where soil samples contained less than 50 mg/kg PCBs, and the excavated soil was subsequently disposed of as hazardous waste.

Perchloroethylene (PCE) was discovered in the soil beneath the drain system near catch basins 150 and 151. In both of these locations, soil was excavated to a depth of approximately seven feet because the soil was also contaminated with PCBs.

The catch basins and sections of drain line were placed in bins and disposed of as hazardous waste. Soil which was sampled and determined to contain greater than 50 mg/kg PCBs was also disposed of as hazardous waste. Except as noted in Section 3.2.2, soil that was sampled and determined to contain less than 50 mg/kg PCBs was placed directly into a "clean" bin. A composite sample was collected and analyzed to confirm that each bin contained less than 50 mg/kg PCBs and the contents of the bin were then disposed of at a nonhazardous waste (Class III) landfill.

3.2.1 Determination of PCB Contamination

A concentration of 50 milligrams per kilogram (mg/kg) of PCBs in soil, on a wet weight basis, was used as the criterion for deciding whether soil was significantly contaminated or not. This concentration represents the total threshold limit concentration (TTLC) for PCBs, as defined in Title 22, California Code of Regulations, Division 4, Chapter 30, Article 11 (§66699(c)). This concentration represents the minimum concentration at which wastes contaminated with PCBs are defined as hazardous. Samples taken by ERCE were used to determine if PCB concentrations greater than 50 mg/kg were present in the soil around the drain line. The location and number of samples collected was determined by following a sampling strategy established by ERCE.

This strategy is presented in detail in the full report in Appendix ZZ. The purpose of the strategy was to 1) characterize excavated soil as hazardous or nonhazardous, and 2) determine whether in-place soil was hazardous and had to be removed, or whether it was nonhazardous and could remain.

Two methods of analysis were used to determine whether concentrations exceeded 50 mg/kg [equivalent to parts per million (ppm) by weight]: 1) field screening test kits, manufactured by Dexsil Corporation, and 2) laboratory analysis at Analytical Technologies, Inc. (ATI) of San Diego, California, an analytical laboratory certified by the California Department of Health Services to perform hazardous waste analyses. Many samples were screened for PCB contamination by using the test kits, which claim to have a detection limit of 50 mg/kg according to the manufacturer. To verify the accuracy of the test kits, most of the first thirty samples that were tested with the test kits were also analyzed at the laboratory. These analyses showed a good correlation. After the first thirty samples, most samples with positive results continued to be sent to the laboratory for quantification of PCB concentration.

3.2.2 Excavation and Waste Disposal

During each phase, the concrete pavement, the soil overlying the drain line, the catch basins, the actual storm drain line, six inches of soil beneath the drain line, and any contaminated soil were removed. The catch basins and drain line were removed by a backhoe, placed into visqueen-lined bins, and disposed of as hazardous waste. Soil that was sampled and determined to contain greater than 50 mg/kg PCBs was also placed in these bins; this soil was removed by a backhoe or manually shoveled by Fritz Nachant personnel where obstructions were encountered. These bins were hauled to the US Ecology facility (a Treatment, Storage, and Disposal Facility) in Beatty, Nevada. Soil that was sampled and determined to contain less than 50 mg/kg PCBs was placed directly into a "clean" bin. Most of this soil originated from above the drain line. Composite samples were collected from the contents of each "clean" bin and were sent to AT1 for analysis. One of these seventeen bins contained 69 mg/kg PCBs and was subsequently disposed of as hazardous waste, while the remaining sixteen bins contained less than 50 mg/kg PCBs. Twelve of these sixteen bins contained less than 0.5 mg/kg PCBs, while the other four contained less than 9 mg/kg PCBs. The contents of these sixteen bins were then disposed of in a sanitary landfill.

3.2.3 Excavation Phase I

The Phase I portion of the project extended from the city manhole at the sidewalk adjacent to Harbor Drive, northwest to catch basin 154, and then north through basins 153 and past 152; Appendix W Figure 2-1 shows a drawing of the portion of the 15/30 storm drain system involved in Phase I. The actual removal of the original 15/30 system began on October 3, with Phase I work continuing through November 14.

The catch basins and drain line were removed and disposed of as hazardous wastes. PCBs were found in the soil in significant quantities (over 50 mg/kg) in two locations, the first under a buried catch basin whose presence was not known at the start of this project, and the second between basins 152 and 151. At both locations, soil was excavated to a depth where samples were found to contain less than 50 mg/kg PCBs; this excavated soil was disposed of as hazardous waste. The width of the excavated trench was generally 5 to 15 feet. Except for these two locations, no PCB concentrations were found in the soil above a level of 6.2 mg/kg. Appendix W, Figure 2-1 shows plan and elevation views, the sample results, their locations, and a profile of the depth of excavation for Phase I. Appendix W contains tables which list the sample number, sample location, date, time, analysis performed, and results for all samples.

3.2.3.1 Catch Basins

Prior to removal of the catch basins, sediment in the catch basins was sampled and analyzed to determine the maximum PCB concentrations of materials that would be transported to the US Ecology facility. High concentrations of Aroclors 1248 and 1260 were found in the sediment in catch basins 152 (1,100 mg/kg Aroclor 1248, 70 mg/kg Aroclor 1260) and 153 (570 mg/kg Aroclor 1248, 77 mg/kg Aroclor 1260). Basin 154 showed only 19 mg/kg Aroclor 1248. After the catch basins and drain line were removed and replaced with new catch basins and drain lines, a rainfall on November 14 washed some soil into basin 152. Samples of sediment collected from the basin 152 outlet, the bottom of basin 153, and the bottom of basin 154 were analyzed and found to contain PCB concentrations of 0.92, 8.0 and 0.62 mg/kg, respectively. All sediment in basins 152, 153, 154 and 155, as well as the sediment in the drain lines between these basins, was scheduled for subsequent removal by TRA.

3.2.3.2 Soil Above Drain Line

During the early part of Phase I, the soil excavated from above the drain line was placed directly into dump trucks without sampling at the time of excavation. The determination that the soil was nonhazardous was based on tests of the soil in place, before it was excavated. Some of the first samples taken in the project were collected to determine if contamination was likely to be found above or to the sides of the existing drain line. The first two soil samples, collected above the drain line between the city manhole and the buried catch basin, and alongside the drain line near the city manhole, showed 1.5 mg/kg of PCBs or less. These samples had been collected from areas believed most likely to be contaminated in order to confirm that there was no contamination above the line. Subsequent soil samples above the drain line near catch basin 151 yielded no detectable PCBs (i.e. less than 0.5 mg/kg). Based on the results of these samples, ERCE concluded that the soil excavated above the drain line could be transported to a nonhazardous landfill by dump truck without additional sampling.

3.2.3.3 Buried Catch Basin

A previously unknown buried catch basin (BCB) was unearthed approximately two-thirds of the way from basin 154 to the city manhole near Harbor Drive, where the new catch basin 155 is now located. The buried catch basin had been covered with dirt and paved over at some time during the past. The basin reached to a depth of approximately six feet below grade and had trapped a large amount of accumulated sediment. Although the top layers of sediment contained only 26 mg/kg (of Aroclor 1260), sediments found in the bottom of the basin had a concentration of 4,300 mg/kg (of

Aroclor 1248). As with all sediment and waste material removed from the existing catch basins, this material was disposed of as hazardous waste.

Because the buried catch basin was cast in place around a 12 kVa power line, it was necessary to break apart the basin in order to remove it. The basin was jack-hammered and removed, and a soil sample taken 1 to 2 feet below the removed basin (approximately 9 to 10 feet below pavement level) showed 380 mg/kg Aroclor 1248. Soil at this depth, including soil in the collected samples, was saturated with ground water. Because of the depth of the pit, the instability of the soil material, and the potential for collapse of the trench walls, the trench was widened. On the south side of the power line below the BCB, a sample taken 3-1/2 feet below the BCB showed 250 mg/kg, but 5-1/2 feet below the BCB the concentration was 3.6 mg/kg. North of the line, samples taken at the 3-1/2 and 5-1/2 foot depths showed results of 6.5 and 22 mg/kg Aroclor 1248 respectively. Excavation proceeded to a depth of 5-1/2 feet and the soil was disposed of as hazardous waste. The pit was then backfilled with new Class I1 aggregate to bring the trench up to the grade necessary to install the new catch basin 155 and drain line.

3.2.3.4 City Manhole

Samples of the sediment in the city manhole at the beginning of the project (October 6) and six weeks into the project (November 18) showed 37 mg/kg and 79 mg/kg Aroclor 1248, respectively. Some sediment was removed from the city manhole on November 18 and placed in a 55-gallon drum for later disposal as hazardous waste. The remainder of the sediment from the city manhole was removed at a later date, as witnessed by TRA personnel, and this waste was also placed in a 55-gallon drum and disposed of as hazardous waste.

3.2.3.5 Between Basin 152 and 151

Two samples taken below the drain line showed Aroclor 1248 concentrations of 160 and 340 mg/kg. Since contamination was found in this region and access was restricted by underground utility lines, work on this area was postponed until the Phase II portion of the project had begun.

3.2.3.6 Remainder of Drain Line

With the exception of the samples taken beneath the buried catch basin and in between basins 152 and 151, all of the soil samples in Phase I collected from beneath and above the drain line from basin 152 to the city manhole had 6.2 mg/kg or less of PCBs

(Appendix W, Figure 2-1). Therefore, this soil was excavated and placed in nonhazardous bins. Composite sample results for soil in the bins were 8.5, 6.5, 0.55, <0.5, and <0.5 mg/kg Aroclor 1248. These bins were hauled to a nonhazardous landfill for disposal. The installation of the new drain line and repaving of the Phase I portion was completed during November.

3.2.4 Excavation Phase II

The second phase began on November 15 and was completed by December 23. Phase II work continued upstream from the end of Phase I, moving eastward through basins 151, 150, 149, 148, 147, and north to a point ten feet south of basin 146. Significant concentrations (over 50 mg/kg) of PCBs in the soil were found in two main locations, between catch basins 151 and 152, and in the vicinity of basin 150, as well as at several isolated locations. Appendix W, Figure 2-2 illustrates the sampling results along the Phase II section of the line, as well as a profile of the excavation. The width of excavation was approximately 4 to 6 feet.

3.2.4.1 Soil Above the Drain Line

Soil above the drain line was sampled at two locations and found to be negative (less than 50 mg/kg) with the test kits. One sample was located midway between basins 150 and 151, while the other was taken six feet south of basin 146. Earlier sampling west of basin 151 revealed no detectable PCBs above the drain line. Based on these results, the soil above the drain line was placed in nonhazardous bins. Composite samples were collected from the five bins that were filled with soil from above the drain line and were found to contain no detectable concentrations of PCBs according to ATI laboratory analysis.

3.2.4.2 Catch Basin 152 to 151 Area

PCB concentrations greater than 50 mg/kg were found below basin 151 and beneath the line between basins 151 and 152. A sag in this section of the pipeline was observed on a July 3, 1987, videotape made by National Plant Services (NPS) as they wheeled a video camera through the inside of the drain line. Below basin 151, a sample six feet below the pavement (three feet below the bottom of the basin) had 58 mg/kg Aroclor 1248, but a sample one foot deeper had a negative test kit result. Therefore, soil was excavated to the seven foot depth under the basin. In addition, soil was excavated to a depth of seven feet in both the upgradient and downgradient directions, and five feet on both sides. Soil at this depth was saturated. On the north wall of the trench, a soil sample was collected, analyzed, and found to contain 140 mg/kg PCBs. One or two feet of soil were excavated at this northern (lateral) side until a sample which showed only 8.2 mg/kg was reached.

Six feet east of basin 152, a concentration of 160 mg/kg was found in a sample collected directly beneath the line, while a concentration of 23 mg/kg was recorded one foot deeper. Therefore, soil from basin 152 to the sample location was excavated to this deeper level. Seven feet west of this basin, an Aroclor 1248 concentration of 340 mg/kg was discovered at a six inch depth, 77 mg/kg at a one foot depth, but a negative test kit result was obtained at a 1-1/2 foot depth. Therefore, soil in the remainder of the section between basins 152 and 151 was excavated to the depth of 1-1/2 feet below the drain line.

3.2.4.3 Between Basins 151 and 150

One sample at a six inch depth below the drain line showed 86 mg/kg Aroclor 1248. However, a sample six inches deeper, as well as three other samples at the one foot depth located between the basins, had 12 or less mg/kg Aroclor 1248. Based on these results, one foot of soil was removed beneath the drain line between these basins, except in the vicinity of the basins, where excavation was deeper as noted in the previous and following sections.

3.2.4.4 Catch Basin 150 to 149 Area

Contamination was found from a point approximately 20 feet west of catch basin 149, and continuing to a point about six feet west of catch basin 150. The highest soil sample PCB concentration found was 330 mg/kg Aroclor 1248 at a point six feet downstream of basin 150 and six inches below the original drain line. This was the approximate location of a moderate offset in the drain line, as seen in the NPS videotape. To remove the soil where samples indicated concentrations greater than 50 mg/kg, the trench was increased to a depth of three feet below the drain line, extending from approximately 20 feet downstream of basin 150 to approximately 15 feet downstream of catch basin 149. The depth of the trench following this excavation was seven feet. An additional foot of soil was excavated below the location of catch basin 150, bringing the depth there to eight feet below the pavement. The water table was reached at approximately seven feet below grade.

3.2.4.5 Catch Basin 149 to 146

Two samples taken beneath basin 149 at the six and seven foot depths had positive test kit results. A sample collected from the eight foot depth tested negative, so soil was excavated to this depth of eight feet below pavement level under the basin and to three feet on both the upstream and downstream sides. Subsequent ATI analyses of the samples that had tested positive revealed that the highest sample concentration contained only 28 mg/kg Aroclor 1248. East of basin 149, past basin 147 and extending to about 10 feet downstream of basin 146, all four samples taken beneath the drain line showed either less than 0.5 mg/kg PCBs or were negative with the test kits. About one foot of soil was removed below the drain line for this length of the trench. Removal of basin 146 and the section of pipe extending 10 feet south were delayed until Phase III.

3.2.4.6 New Trench near Catch Basin 148

A new trench line was dug to the south of the old drain line upstream of basin 149. A sample collected from this new trench east of basin 148 had a negative test kit result. Soil was then removed from the new trench line and placed in a pile on the concrete pavement for potential later use in refilling the old trench. This soil pile was compositely sampled and showed a negative test kit result. Much of the soil pile was later placed into two non-hazardous bins, but subsequent laboratory analysis of composite samples taken from these bins revealed that one bin contained 69 mg/kg Aroclor 1260; the contents of this bin were then disposed of as hazardous waste. The other bin contained 1.1 mg/kg Aroclor 1248 and 1.9 mg/kg Aroclor 1260; the contents of this bin were then disposed as non-hazardous waste. The new drain line was installed, gravel was backfilled, and the trench was repaved by the end of December.

3.2.4.7 Lateral Sampling

Throughout the project, most samples were collected from directly beneath the drain line or catch basins at varying depths. In order to assess the potential for lateral migration of PCBs, several samples were collected at the trench edges (generally 2 to 3 feet on either side of the drain line or basins) and analyzed for PCBs. These samples were collected at locations with some of the highest PCB soil concentrations found during this project (i.e., near catch basins 151, 150, and 145). One sample collected 2 feet north and 3 feet below basin 151 had a concentration of 140 mg/kg Aroclor 1248, but one foot further north the concentration was only 8.2 mg/kg; soil was excavated north to this sample. The remaining five samples collected laterally all had negative test kit results or less than 2 mg/kg PCBs according to ATI analyses.

3.2.4.8 PCE Contamination

Elevated concentrations of perchloroethylene (PCE), a volatile organic compound, were discovered during Phase II work. A report detailing ERCE's investigation of PCE contamination was submitted to the California Regional Water Quality Control Board, San Diego Region, on December 27, 1988.

3.2.5 Excavation Phase III

The Phase III portion of the project continued from the end of the Phase II work (10 feet south of basin 146), continuing north through basins 146, 145, 144, 143, and 141. The two inlet drains to basin 144 were also removed, as was the inlet drain to 146. Basins 140 and 142, as well as the connecting drain lines, were not removed but have been sealed.

The concrete pavement was broken up and removed by mid-December, but excavation of soil and the drain line did not begin until the last week of December. Phase III work continued through January 31, 1989. Appendix W, Figure 2-3 shows sample results and a profile of the excavation that took place. The width of trench excavation was approximately 3 to 5 feet.

3.2.5.1 Soil Above Drain Line

Three samples were taken above the drain line, each of which showed negative test kit results. These samples, each of which were taken one to three inches below the pavement level, were located a few feet from either catch basin 143, 144, or 145 (Figure 2-3). The soil above the drain line was thus excavated and disposed of as nonhazardous waste. Composite samples from these three bins each showed less than 0.5 mg/kg PCBs.

3.2.5.2 Catch Basin 145 Area

A sample collected from five feet north of basin 145 and one foot below the drain line level tested negative, as did a sample 11 feet south of the basin at a depth of nine inches below the line. However, two samples taken in between tested positive. Samples taken 1-1/2 to 2 feet below these positives showed 580 and 17 mg/kg Aroclor 1248. Samples collected 1 to 1-1/2 feet deeper had concentrations of only 5.6 and <0.5 mg/kg. Therefore, excavation proceeded to this depth, which was a total of 6-1/2 to 7 feet below the pavement level. Soil at this depth was saturated.

3.2.5.3 Inlets to Catch Basin 144

A sediment sample collected from one foot into the northwest inlet line showed only 29 mg/kg Aroclor 1248, while a sediment sample in the inlet line two feet from Building

128 had 3.4 mg/kg Aroclor 1248. In the southwest inlet line, a sample collected from three inches into the southwest inlet line showed only 9.8 mg/kg Aroclor 1248. At the westernmost section of this inlet line, not enough sediment was available to obtain a sample.

These inlet lines and six inches of soil beneath them were excavated and disposed of as hazardous waste. A composite sample of soil from above the inlet lines had a negative test kit result. Beneath the lines, samples were taken under each end of the two inlet lines; all four samples tested negative with the test kits. Therefore, no further excavation took place.

3.2.5.4 Inlet to Catch Basin 146

A sample of the sediment six to ten inches into the inlet drain pipe to basin 146 showed a positive test kit result, but only 7.9 mg/kg Aroclor 1248 as reported by ATI. It was decided to remove this inlet line anyway, because it was no longer in use. A composite sample of soil above the inlet line tested negative with a test kit. After being excavated, this soil was disposed of as nonhazardous waste. Approximately three cubic yards of soil were involved.

The inlet line, as well as approximately six inches of underlying soil, was removed and disposed of as hazardous waste. A composite sample of in-place soil beneath the inlet line revealed no detectable PCBs. A sample of sediment about 30 feet inside the inlet line showed only 1.5 mg/kg Aroclor 1248.

3.2.5.5 Remainder of Drain Line

Samples taken in the remainder of the sections of Phase III drain line were below 50 mg/kg PCBs. North of basin 145, seven samples were taken approximately one foot below the drain line; all were negative with the test kits. One of these samples was collected beneath the location of a severe offset located 25 to 30 feet south of basin 141 that was observed on the NPS videotape, but this sample result was negative. In addition, a sample taken from beneath basin 144 was analyzed by ATI and found to contain less than 0.5 mg/kg of each Aroclor. Between the basin 146 area and a point 11 feet south of basin 145, eight samples were taken, six of which were negative and two of which were positive with the test kits. However, these two samples with positive results were analyzed by ATI and reported to contain only 10 and 4.8 mg/kg Aroclor 1248, so no further excavation was undertaken.

3.3 Historical SWCS Cleanout Activities

3.3.1 54-Inch SWCS

Portions of the 54" storm drain system were cleaned three times between 1986 and 1991. The cleanouts were as follows:

- Sediment was removed from CBs 56, 57, 58, 66, and 67 between 22 and 29 October 1986, pursuant to Findings No. 16 and 17 of CAO 86-92. TRA removed standing water from the surface of sediment lying in each catch basin. Then, sediment was shoveled into polyethylene bags and the catch basins were vacuumed to remove the remaining loose sediment. The walls and floors of each catch basin were power brushed with a wire brush to grind down rough surfaces. Finally, the concrete in each catch basin was cleaned with a highly alkaline surfactant [WESTEC, Appendix ZZ; RWQCB, 1986].

- Contaminated sediment was removed from CB 64 between 30 November and 1 December 1987 [RWQCB, 1987a]. Details about the cleaning procedure were not available for review.

- In early March 1991, CB 55 was cleaned [TRA, 1991]. Further descriptive information about this cleanout was not available.

3.3.2 60-Inch SWCS

Seven known cleanouts were conducted in various portions of the 60" storm drain system that lie within the former TRA facility:

- Sediment was removed from CBs 92, 130, and 133 during the period of 22 through 29 October 1986, pursuant to Finding No. 17 of CAO 86-92. Standing water was removed from the surface of the existing sediment, sediment was shoveled into polyethylene bags, remaining loose sediment was vacuumed and placed in designated drums, catch basins were power brushed with a wire brush, and concrete walls and floors were cleaned with a highly alkaline surfactant [WESTEC, Appendix ZZ; CAO 86-92, 1986].

- Between 30 November and 1 December 1987, CBs 91 and 102 were cleaned. Details about the cleaning procedures were not available [RWQCB, 1987a].

- By 23 March 1989, sediment had been removed from CBs 97, 98, 99, 102, 104, and 133. Sediment was removed with vacuum trucks and manually shoveled from areas that were not easily accessed by the vacuum trucks. Then the walls and floors of each catch basin were scrubbed with a mixture of water and Alconox detergent, followed by a hexane rinse. The trench between Buildings 120 and 140 was likewise cleaned [ERC, Appendix ZZ].

- On 29 December 1989, CB 97 was cleaned again. Water was removed and absorbent was used to remove moisture. Sediment and absorbent were removed and the walls and floor were cleaned with hydrochloric acid [TRA, 1989].

- Prior to the initiation of Convair Lagoon Capping Project in late 1996 / early 1997, TRA cleaned the 60" storm drain system from the northern property line with San Diego Airport Lindbergh Field to the outfall at Convair Lagoon. The main 60" line was initially flushed with high volume pumps from CB 129 to the outfall. A jetter was then used to assist in the removal of the remaining sediment. The work was completed by 22 January 1997 [Laidlaw, undated]. Samples collected between 1997 and 2002 consistently revealed total PCB concentrations below the Convair Lagoon WDR 98-21 action level (Appendix A, Exhibit 8-2). A total of 11 sediment samples collected in 1999 through 2002 by JNE & Associates, Inc., and Geosyntec showed concentrations ranging from non-detectable levels (i.e., less than 0.02 mg/kg) to 3.8 mg/kg.

- The Site investigation and characterization work performed in 2005 included an investigation to determine the nature and extent of PCBs in sediment in the on-Site SWCS. The Site Characterization Report (Geosyntec, 2005) identified those sections of the SWCS that contained sediment with detectable levels of PCBs. This report, as well as subsequent sediment sampling data, were used to determine which sections of the SWCS would be included in the storm drain cleanout activities. Based on observed ambient levels of PCBs in the 1 mg/kg range located within the surrounding SWCS all storm drains on the Site in which sediment samples exceeded 1 mg/kg of total PCBs were included in the storm drain cleanout efforts during the summer/fall of 2006. TDY cleaned the entire 60-inch storm drain system from the northern property line with San Diego Airport Lindbergh Field to the outfall at Convair Lagoon and the portion of the 60-inch storm drain beneath the Airport between the former TRA property boundary and the former GD LFP Site. General Dynamics undertook simultaneous cleanout efforts on the Former GD LFP site (Appendix C, Figure 2).

- A 150-foot long section of the 60-inch storm water conveyance system was cleaned in July 2007 to remove PCB impacted sediment beneath a lateral entering the 60-inch SWCS from the west at CB-133. Sediment was removed from approximately 10-feet north of CB-133 to 10 feet south of CB-134. During this cleanout event, a blind manhole was also cleaned to address TPH and PCB impacted sediment that was adhered to the walls of the former man way access (Appendix E).

3.3.3 30-Inch East

Sediment samples collected from within the 30-inch East storm drain reportedly contained total PCB concentrations up to 26,000 mg/kg (Appendix ZZ, Geosyntec, 2002;). Following the issuance of CAO 86-92, between 1986 and 1996, TDY undertook a series of line and catch basin cleanouts within the 30" E. storm drain system and also replaced the main line. The cleanout and replacement operations are summarized as follows:

- Starting on 22 October 1986, sediment in CBs 140 through 154 was removed and the interconnecting pipes were flushed. Water was pumped from each catch basin and the sediment was shoveled into polyethylene bags. Then, the catch basins were vacuumed to remove remaining loose sediment. Once the sediment was vacuumed, the interconnecting pipes were cleaned with water and high-pressure steam [WESTEC, Appendix ZZ; CAO 86-92].

- Between October 1988 and January 1989, original concrete CBs 141 through 154 were removed and replaced with new concrete catch basins. CB 155, a new concrete catch basin, was installed to replace a previously buried catch basin. The original interconnecting reinforced concrete pipes were removed and replaced with PVC pipes, with the exception of the pipe connecting CBs 153 and 154. Piping between CB 155 and MH 201 was also removed and replaced with PVC pipes, as was the drain line from MH 201 to Convair Lagoon. During this period, soils along the storm drain alignment with PCB concentrations greater than 50 mg/kg were removed and sent for disposal.

- CB 145 was cleaned again in the early part of March 1991 [TRA, 1991], although there is no descriptive information about this cleanout. Also, Vault

No. 1, which is adjacent to CBs 151 and 152, was cleaned out as well at this time.

- In November 1996, prior to Convair Lagoon Capping Project, sediment was removed from the 30” E. system from MH 201 to the outfall into Convair Lagoon. The sediments were manually shoveled from the line, and the sediment placed in 55-gallon drums for off-site disposal [Laidlaw, 1997a].

3.3.4 Other Facilities

After TRA completed the removal of sediments in the 60” storm drain system in late 1996 and early 1997, further sampling in March 1997 revealed that sediment samples collected in the 60” system upgradient of the TRA property also contained elevated concentrations of PCBs. As a result, in May 1997, General Dynamics, under the direction of the Port, removed sediment from a section of the 60” line located at General Dynamics’ former Lindbergh Field Plant and from the San Diego Airport Lindbergh Field. The 60-inch storm drain system was cleaned from the TRA property boundary north to the boundary between General Dynamics and the City, and also from that point west to the property boundary between General Dynamics and the MCRD (Appendix T, Figure 2-3). In 2004, General Dynamics performed an additional cleanout of all tributaries to the 60-inch SWCS on the former GD LFP site (Appendix R, Brown and Caldwell, 2006)

Data collected since the TRA and General Dynamics / Port cleanouts of the 60” system in 1997 indicate that concentrations are generally orders of magnitude lower than pre-cleanout concentrations (Appendix A, Exhibit 7-3). The highest concentration measured within the 60” system between the 1997 cleanouts and April 2002 was 26 mg/kg from a sample on the San Diego Airport Lindbergh Field facility approximately 325 ft north of the property boundary between San Diego Airport Lindbergh Field and the former TRA facility [Brown and Caldwell and MEC, 2002].

3.4 <u>1997 General Dynamics Storm Drain Cleanout</u>

In May-June 1997 General Dynamics conducted a sediment removal/storm drain cleanout of the trunk line of the 60-inch SWCS. The 2002 PCB technical report describes two stockpiles of sediment which were generated during this removal action with total PCB concentrations of 6.80 mg/kg and 8.40 mg/kg, respectively. The General Dynamics presentation to the RWQCB included as Appendix R states that a total of approximately 700 tons of sediment was removed during this storm drain cleanout.

3.4.1 January 2003 On-Site Storm Water Conveyance System Maintenance

In January 2003, the Pacific Trans Environmental Services, Inc. (PTES) under direct contract with the Port conducted the following activities:

- sampled and analyzed sediment from seventy-four of the catch basins and manholes present at the Site,
- cleaned the above-noted seventy-four catch basins and manholes, and
- hydro-blasted and cleaned the 30-inch East storm drain system with the exception of the line segment between CB 141 and CB 143 located within Building 128.

Personnel conducting these activities had completed the 40-hour OSHA HAZWOPER training, and were certified to perform work in confined spaces. A summary of these activities is presented below.

3.4.1.1 Catch Basin Cleanout Activities

PTES removed sediments from and cleaned seventy-four onsite catch basins and manholes between January 15 and 24, 2003. These catch basins and manholes are located within each of the onsite storm drain systems, including the four storm drain systems that discharge to Convair Lagoon and the two that discharge to San Diego Bay. The catch basins and manholes were identified from a map of the onsite storm water conveyance system, provided by the Port, and dated February 15, 1982. Each of the catch basins and manholes sampled and cleaned are identified on Appendix Y, Figure 5. Of the identified catch basin, the covers to CBs 90 and 199 could not be removed. Thus, sediment from these catch basins was not removed. The catch basins and manholes were cleaned using the following protocol:

1. Remove the steel grate or cover.
2. Remove dry debris with a trowel and place debris into a 55-gallon steel drum.
3. Spray the interior surfaces of the smaller catch basins and manholes with an aqueous-based cleaning solution in such as manner so that the solution does not enter the storm drain line.
4. Wipe the interior with clean cloth. After cleaning, place the cloth into a 55-gallon steel drum.

5. For the larger catch basins, pressure wash the interior of the basin and use a tornado-vac that is fitted to a 55-gallon steel drum to collect the liquids and loosened solids so that the water from the pressure washer does not enter the storm drain line.
6. Label each drum identifying the catch basin(s)/manhole(s) from which materials were obtained.
7. Place mesh material over the open basin.
8. Replace steel grate or cover.

3.4.1.2 Sediment Sampling

The drum containing the sediment removed from a particular catch basin is identified in Table III. Most of the drums contain sediments removed from multiple catch basins.

A sample was collected from each of the twenty-seven drums. Each sample (sediment or water) was placed into a 4-ounce glass jar, and transported to EnviroMatrix Analytical, Inc., a California-certified laboratory, for PCB analysis. The PCB results were reported on a dry weight basis. The laboratory report containing the analytical results is presented in Appendix A.

The reported Aroclors 1248 and 1260, and total PCB concentrations for the samples collected from each drum are summarized in Appendix Y, Table III. A review of Appendix Y, Table III indicates that the drum samples contained total PCB concentrations ranging from non-detected up to 33.8 mg/kg. The concentrations and the associated drum number are also depicted on Appendix Y, Figure 5 adjacent to the respective catch basin/manhole. The drum number is also color coded on Appendix Y, Figure 5 to more readily identify which drums contained samples with elevated PCB concentrations.

3.4.1.3 Line Hydro-blasting and Cleanout

The lines of the 3D-inch East storm drain system were cleaned by hydro-blasting, with the exception of the line segment between CB 141 and CB143 located within Building 128. The tip of the hydro-blasting equipment used propels 20 gallons of water per minute at 1,000 pounds per square inch (PSI). The hose was introduced into the storm drain line at the downstream catch basin. The pressurized water from the tip (jets) provides the thrust to propel the hose forward through the pipe. When the hose reaches the upstream catch basin, the machine is reversed and the jets pull the water, debris, and sediment within the line back towards the downstream catch basin. As the water, debris, and sediment moves into the downstream catch basin, it is vacuumed out of the catch basin utilizing a vacuum tanker truck such that the contents of the storm drain line do not enter Convair Lagoon. The contents of the tanker truck contained relatively low concentration of PCBs. The tanker truck transported the materials (comprised predominantly of water with some sediment) to DeMenno Kerdoon in Compton, California, a permitted waste disposal facility.

3.5 2004 General Dynamics Storm Drain Cleanout

In 2004, General Dynamics cleaned out all of the tributaries to the 60-inch SWCS on their former property. These tributaries are generally shallow and non-tidally influenced. The General Dynamics presentation to the RWQCB included as Appendix R states that a total of approximately 100 tons of sediment was removed during this cleanout activity. Characterization results from the six roll-off bins apparently related to this cleanout contained average total PCB concentrations ranging from 2.5 mg/kg to 249 mg/kg (Appendix YY).

3.6 2006 SWCS Cleanout

3.6.1 Approach and Methods

The 21 February 2006 Storm Drain Cleanout Work Plan (Geosyntec, 2006a) discussed several available technologies for sediment removal from storm drain pipes, including power bucketing, high-velocity water jetting, hydroblasting, and manual removal. Upon review of the available technologies, high-velocity jetting was judged to be the most effective alternative for the small-diameter pipes, while a mixture of manual labor and high-velocity jetting was judged to be the most effective solution for the large-diameter SWCS storm drains.

Groundwater infiltration and base flow were managed through pumping and filtration systems. Prior to the initiation of active cleaning in a section of storm drain, water was extracted, filtered through a dewatering bin, and re-routed to an adjacent SWCS. During active cleanout, water was again filtered prior to discharge to either a local sewer pump station or a permitted on-site sanitary sewer location.

Cleaning of the storm drain sections progressed from upstream to downstream. Storm drain sections were isolated using an inflatable rubber plug or a sandbag dam placed downstream of the section to be cleaned. A high-velocity water jet was used to scour and flush sediment from the upstream sections into a downstream catch basin. The accumulated sediment and water was removed from the catch basin by using either the vacuum system located on a Jetter-Vac truck or a vacuum truck.

3.6.2 Determination of Storm Drain Cleanout Extent

The site investigation and characterization work performed in 2005 included an investigation to determine the nature and extent of sediment contamination in the Site SWCS. The Site Characterization Report (Geosyntec, 2005) identified those sections of the SWCS that contained sediment with detectable levels of PCBs. This report, as well as subsequent sediment sampling data, was used to determine which sections of the SWCS would be included in the storm drain cleanout activities. Based on observed ambient levels of PCBs in the 1 mg/kg range located within the surrounding SWCS all storm drains on the Site in which sediment samples exceeded 1 mg/kg of total PCBs were included in the storm drain cleanout efforts.

3.6.3 54-inch Storm Drain to Convair Lagoon

3.6.3.1 Section CB37 to CB49

The 12-inch diameter reinforced concrete storm drain (RCP) storm drain section from catch basin CB37 to CB49 was cleaned on 19 June 2006 using the Jetter-Vac. Prior to cleaning, the section of storm drain downstream of catch basin CB43 was blocked off using sandbags to prevent sediment transport into the main section of the 54-inch storm drain. Cleanout activities commenced by progressively cleaning each section of storm drain between catch basin CB37 and catch basin CB43. After this section of storm drain was cleaned, the upstream side of catch basin CB43 was blocked to seal off the previously cleaned areas. Prior to cleaning the section of storm drain between catch basin CB43 and catch basin CB49, an inflatable plug was installed in the 54-inch SWCS outfall. Each section of storm drain was cleaned five times at a water pressure of 3000 psi. After each section of storm drain was cleaned, the catch basins were cleaned by pressure washing followed by vacuuming for removal of the solids and water.

A CCTV inspection was performed to document that sediment within storm drain section CB37 to CB49 was removed (Appendix C, Image 1).

3.6.3.2 Section CB45 to CB49

The 8-inch diameter RCP storm drain section from CB45 to CB49 was cleaned on 27 July 2006 using the Jetter-Vac. This section was cleaned five times at a water pressure of 1500 psi. After cleanout of section CB45 to CB49, catch basin CB45 was cleaned using the pressure washer followed by vacuuming for removal of the solids and water. During the cleaning of storm drain section CB45 to CB49, the Jetter-Vac hose could be not inserted further than 53 feet upstream of catch basin CB49.

A CCTV inspection of this lateral was performed, and it was documented that the storm drain was collapsed in an area approximately 53 feet upstream of catch basin CB49. (Appendix C, Image 2) Although the RCP storm drain was collapsed in this area, the majority of the sediment was removed to 46 feet upstream of catch basin CB49 (Appendix C, Image 3). Past this point, a small amount of sediment was observed in the invert of the storm drain. Cleanout activities in this section of the storm drain were terminated to prevent erosion of the collapsed area.

3.6.3.3 Section CB200 to CB49

The 10-inch diameter RCP storm drain from catch basin CB200 to catch basin CB49 was cleaned on 27 July 2006. During the cleanout of section CB200 to CB49, the Jetter-Vac hose was unable to proceed further than 82 feet downstream of catch basin CB200 due to a reduction in the diameter of the storm drain. The section that was unobstructed was cleaned five times using the Jetter-Vac at a water pressure of 1500 psi.

A CCTV inspection of the 10-inch tributary was performed, and it was documented that there was a reduction in storm drain diameter from a 10-inch storm drain to an 8-inch storm drain starting at approximately 82 feet (Appendix C, Image 4). Due to the change in storm drain configuration, neither the Jetter-Vac hose nor the other cleanout equipment was able to proceed past this point. Cleanout activities for only the 10-inch section of the storm drain were documented. All observable sediment had been removed from this part of the storm drain (Appendix C, Image 5).

3.6.3.4 Section CB55 to CB54

The 6-inch diameter RCP storm drain from catch basin CB55 to catch basin CB54 was cleaned on 28 July 2006. This section was cleaned a minimum of five times using the Jetter-Vac at a water pressure of 1500 psi. The downstream side of catch basin CB55 was plugged to prevent sediment from moving down the storm drain during the cleanout. After the sediment was removed from the storm drain, catch basin CB55 was cleaned using the pressure washer followed by vacuuming to remove the sediment and water. Catch basin CB54 could not be cleaned because the catch basin cover was welded in place.

A CCTV inspection documented the removal of all observable sediment (Appendix C, Image 6). However, an excess of mortar between storm drain joints was observed.

3.6.3.5 Section CB20 to CB63

The 30-inch RCP storm drain from catch basin CB20 to catch basin CB63 was cleaned from 27 June to 30 June 2006. The cleanout of this section was performed using the Jetter-Vac at a water pressure of 1500 psi. Prior to cleanout, plugs were installed at both the upstream side of catch basin CB20 and the 30-inch outfall located at catch basin CB63. The cleanout of section CB20 to CB63 was performed over three consecutive days. After cleanout of the storm drain, catch basin CB23 and CB20 were cleaned with the pressure washer followed by removal of the resultant sediment and water. A final cleanout of the storm drain was performed from catch basin CB63 using the Jetter-Vac at a higher water pressure of 3000 psi. During this flushing, a plug was placed in the downstream side of catch basin CB20 to prevent flushing of sediments upstream to the Airport property.

Reconnaissance CCTV inspection revealed that an area of cloudy water was present 15 feet downstream of catch basin CB20. The Jetter-Vac was then staged at catch basin CB20 in order to re-clean this downstream section from CB20 to CB63 After removal of the sediment, catch basin CB20 was again pressure-washed, and the sediment and water was removed by vacuuming. After completion of the final storm drain cleanout, catch basin CB23 was re-inspected and no evidence of sediment accumulation was noted.

A second CCTV video inspection was performed, and the video images confirmed the sediment had been removed from section CB20 to CB63 (Appendix C, Image 7).

3.6.3.6 Section CB82 to CB64

Eight-inch RCP storm drains from catch basin CB82 to catch basin CB64 were cleaned on 22 June 2006 and 23 June 2006 using the Jetter-Vac and pressure washer. A series of interconnected storm drains exist between these two catch basins, and the storm drains terminate at catch basin CB64. The Jetter-Vac tip could not be manually routed in the downstream direction with this storm drain configuration. Cleanout of this section was performed by attaching a rope to the pressure washer hose and pulling the pressure washer downstream from catch basin CB82 to catch basin CB64. After the pressure washer hose was manually pulled through section CB82 to CB64, the pressure washer was then pulled upstream to catch basin CB82. After this section of storm drain was cleaned, catch basin CB82 and catch basin CB64 were pressure-washed and the sediment and water removed by vacuuming. Since these cleanout activities in section CB82 to CB64 had taken place after the cleanout of the main 54-inch storm drain, a plug was placed in the effluent pipe in catch basin BC64 to prevent the transportation of sediment to cleaned areas of the storm drain.

A reconnaissance CCTV inspection was performed to investigate the condition of section CB82 to CB64 (Appendix C, Image 8). The result of the inspection showed changes in both storm drain diameter and storm drain direction within this section. The CCTV investigation also revealed that in some storm drain areas the invert of the RCP was deteriorating. In addition, a hole in the storm drain is present near the outfall to catch basin CB64 (Appendix C, Image 9). It appears that damage to the storm drain is contributing to the sediment found in section CB82 to CB64. Further cleanout activities were terminated to prevent the washing of sediment from the damaged storm drain into section CB82 to CB64. A sock-style BMP device was fitted onto the outfall at catch basin CB64 to trap and characterize any mobilized sediment.

3.6.3.7 Section CB67 to CB66

The 6-inch VCP storm drain from catch basin CB67 to catch basin CB66 was cleaned on 19 June 2006 using the Jetter-Vac and pressure washer. To prevent the transportation of sediment into the 54-inch SWCS during cleanout activities, both the 12-inch RCP storm drain leading to the 54-inch storm drain and the 8-inch VCP storm drain leading to catch basin CB70 were plugged. The initial cleanout procedure was unsuccessful due to the inability to run the Jetter-Vac hose completely through the storm drain. Upon retrieval of the Jetter-Vac hose, a white, solid substance was found adhered to the jetting tip. Several subsequent runs of the Jetter-Vac hose were successfully performed through the entire section CB67 to CB66, although some resistance to the hose was encountered. In an attempt to clear the white, solid material from the storm drain, a pressure washer hose and hot water were used to flush the storm drain. The result of the storm drain flushing was the mobilization of approximately 10 ounces of the material downstream to catch basin CB67. Several more storm drain flushes with pressurized hot water were performed along the full distance of section CB67 to CB66. Catch basin CB66 and catch basin CB67 were cleaned by pressure washing, and the sediment and water were removed by vacuuming.

A CCTV inspection was performed, and a hole in the storm drain was observed in the south side of the pipe approximately 25 feet west of catch basin CB67 adjacent to the invert of section CB67 to CB66 (Appendix C, Image 10). It was determined through examination of the CCTV video that the damaged invert section was the source of the white material and sediment in the storm drain. Cleanout activities were terminated to prevent any damage to the storm drain. A sock-style BMP device was fitted onto the outfall at catch basin CB67 to trap and characterize any mobilized sediment.

3.6.3.8 Section CB67 East to CB70

The 8-inch VCP storm drain from catch basin CB67 east to catch basin CB70 was cleaned on 20 June 2006 and 21 June 2006 using the Jetter-Vac and pressure washer. A total of nine cleanout runs were completed to remove the sediment from this storm drain. During four runs of the cleanout process, the hose from the Jetter-Vac could not be moved past catch basin CB70, suggesting that there was an obstruction within the storm drain near CB70. However, five successful storm drain cleanouts were performed on the section of the storm drain from catch basin CB70 west to the end of the pipe. Once the cleanout was completed, catch basin CB67 was cleaned by pressure washing and the sediment and water were removed by vacuuming.

A CCTV inspection of section CB67 East to CB70 was performed, and the video showed that accumulated sediment had been removed from catch basin CB67 east to catch basin CB70 (Appendix C, Image 11). A large piece of cement near catch basin CB70 was shown by the video (Appendix C, Image 12). The obstruction appeared to have fallen into the RCP during the building of a skylight drain at catch basin CB70. Since the CCTV equipment could not travel past the cement obstruction, video surveillance beyond catch basin CB70 was not possible.

3.6.3.9 Section Property Line to CB49

The 54-inch RCP storm drain from section CB49 to the northern property storm drain was cleaned in July 2006 using the Jetter-Vac and manual cleaning techniques. The storm drains entering the 54-inch section were sealed off to prevent the flushing of sediment into or out of the SWCS during cleaning. In addition, the 54-inch outfall was plugged to prevent material from entering Convair Lagoon. Storm drains leading off-site were also blocked with storm drain plugs, and the north end of the 54-inch storm drain was blocked by a sandbag dam.

Manual labor was used to remove partially cemented sediment located in the area of catch basin CB49. Digging bars were used to dislodge the sediment, and shovels were used to clear the sediment from the storm drain. After removal of the sediment from the area around catch basin CB49, confined space workers progressed upstream to the north end of the 54-inch storm drain and manually removed the bulk sediment. After removal of the bulk sediment, the Jetter-Vac was used from catch basin CB49 to the north end of the 54-inch storm drain. At the conclusion of the cleanout activities, pressure washing was used to clean the sediment from catch basin CB49, and sediment and water were removed by vacuuming.

A CCTV inspection was performed from catch basin CB49 to the north end of the 54-inch storm drain, and the videos showed that all visible sediment was removed from the north end of the 54-inch storm drain to catch basin CB49 (Appendix C, Image 13).

3.6.3.10 Section CB63 to CB49

The 54-inch RCP storm drain from catch basin CB63 to catch basin CB49 was cleaned on 27 July 2006 using a combination of the Jetter-Vac, pressure washer, and manual cleaning. A storm drain plug was installed at catch basin CB63 to prevent the flushing of sediment into the 30-inch SWCS. The downstream section of catch basin CB63 was also blocked with a sandbag dam.

The Jetter-Vac hose was run upstream from catch basin CB63 to approximately 10 feet north of catch basin CB49. Cleanout of the storm drain progressed upstream in 25-foot increments, and the Jetter-Vac hose was brought back to catch basin CB63 after cleanout of each of the intervals. Between each cleanout interval, confined space workers entered the storm drain and assisted in cleaning the catch basin by sweeping and shoveling sediment to the Jetter-Vac.

A CCTV inspection of the section CB49 to CB63 was performed, documenting the sediment in this part of the storm drain had been removed (Appendix C, Image 14).

3.6.3.11 Section CB63 to CB68

The 54-inch RCP storm drain from catch basin CB63 to catch basin CB68 was cleaned from 28 July 2006 to 1 August 2006 using the Jetter-Vac and manual cleaning. Catch basin CB68 was not large enough for confined space entry; however, it was used as an access point for ventilation, supplied air, and removal of sediment that had been cleaned from the storm drain. A rubber storm drain plug was installed in the upstream side of catch basin CB63 to prevent base flow from entering the 54-inch storm drain during cleanout and to prevent sediment movement into clean storm drains.

Due to elevated hydrogen sulfide conditions in the southern portion of this section, the storm drain was not atmospherically suitable for confined space personnel to work without supplied air. A worker with self-contained breathing apparatus (SCBA) and a four-gas meter measured atmospheric conditions in the storm drain prior to the start of each day of cleaning. Upon commencing work in the areas with elevated hydrogen sulfide levels, personnel were attached to a supplied air device. This device was sufficient to provide supplied air for several confined space workers at a distance up to 300 feet from the supplied air staging area.

The Jetter-Vac was used to mobilize and remove sediment from section CB63 to CB68. Confined space workers assisted in the removal of sediment at catch basin CB63 after the material had been flushed upstream. Workers also performed cleanout activities downstream at catch basin CB68 using shovels to remove the sediment that remained in the storm drain. Final cleaning of catch basin CB68 was performed by inserting a flex-hose into the catch basin and vacuuming out the sediment.

A CCTV inspection was performed on section CB63 to CB68 to document that all visible sediment had been removed from the storm drain (Appendix C, Image 15).

3.6.3.12 Section CB68 to the Outfall

The 54-inch diameter RCP storm drain from catch basin CB68 to the outfall was cleaned from 2 August 2006 to 4 August 2006. Both manual cleaning and the Jetter-Vac were used in the cleanout of this section of the large-diameter storm drain. High concentrations of hydrogen sulfide were present during the cleanout activities, and confined space personnel were required to use supplied air during work in this section of the storm drain.

Initially, cleaning of this storm drain commenced by removing the water and sediment from catch basin CB68 using a pressure washer and vacuum truck. After cleanout of the catch basin, a 6-inch flex hose was inserted into the 54-inch storm drain at a location near the Airport long-term parking lot. Confined space personnel shoveled and swept the bulk of the sediment from the 54-inch storm drain into the flex hose, and the sediment was removed by vacuuming. Cleanout of the storm drain progressed downstream of catch basin CB68 to a small sandbag dam at catch basin CB69.

The Jetter-Vac was used in conjunction with manual cleaning to remove residual sediment located in the vicinity of catch basin CB68. Starting near the outfall, confined space workers equipped with SCBA walked down the storm drain to the outfall and attached a spray tip to the Jetter-Vac hose that had been routed through a port in the outfall plug. The Jetter-Vac was then used to clean and remove water and sediment from the bottom and sides of the storm drain. Sediment was removed in this manner from approximately 275 feet of the lower section of the 54-inch storm drain.

Due to the higher volumes of sediment near the 54-inch outfall, the final 100 feet of storm drain in the southern section of the storm drain required manual cleaning. The confined space workers were equipped with SCBA and cleared the sediment from the storm drain by sweeping the material to the outfall plug and vacuuming the material into a tanker truck.

Both visual observation and CCTV inspection were performed after the cleanout activities to verify that the sediment was sufficiently removed from section CB68 to the 54-inch outfall section (Appendix C, Image 16).

3.6.4 30-inch West SWCS to Convair Lagoon

3.6.4.1 Section CB191 to CB190

The 6-inch PVC storm drain from catch basin CB190 to catch basin CB191 was cleaned on 9 August 2006 using the Jetter-Vac and pressure washer. The cleaning equipment was staged at catch basin CB190, and the Jetter-Vac hose was moved upstream in 20-foot increments to catch basin CB191. This section of the storm drain was cleaned twice at a water pressure of 1500 psi, after which the water generated from the storm drain cleanout was clear of sediment. Prior to the second cleanout, the sky-light drain at catch basin CB191 was pressure-washed. A large amount of organic material was removed from section CB191 to CB190, indicating the need to protect the storm drain from surface sediment runoff. A fine-meshed filter fabric was placed on top of catch basin CB191 and anchored in place with the catch basin grate. The filter fabric served as a simple runoff filtration device to prevent sediment from entering the storm drain.

3.6.4.2 Section CB190 to MH189N

Dual 8-inch RCP/PVC storm drains join catch basin CB190 to manhole MH189. The northern 8-inch storm drain was cleaned on 9 August 2006 using the Jetter-Vac and pressure washer. To prevent the upstream movement of sediment during cleanout of this section, the 6-inch storm drain was plugged at catch basin CB190. The Jetter-Vac was used to clean the storm drain, and sediment was removed at a pressure of 1500 psi. At the conclusion of the cleanout, the wash water was clean and sediment was not detected in the water.

After cleanout of the storm drain, a CCTV inspection of the storm drain was performed downstream of catch basin CB190 (Appendix C, Image 17). The CCTV inspection included the northern storm drain that was between manhole MH189 and CB190. The CCTV video revealed the presence of an asphalt/concrete material that appeared to be cemented to the storm drain walls and floor. This material blocked the camera from advancing more than 12 feet down the storm drain. The remaining portion of the drain was examined using the telephoto zoom on the video camera. No other solid material or sediment in section CB190 to MH189N was noted (Appendix C, Image 18).

3.6.4.3 Section CB190 to MH189S

Dual 8-inch RCP/PVC storm drains join catch basin CB190 to manhole MH189. The southern 8-inch storm drain was cleaned on 9 August 2006 using the Jetter-Vac and pressure washer. To prevent the upstream transport of sediment during cleanout of the storm drain, this section of the 6-inch storm drain was plugged at catch basin CB190. The southern storm drain was cleaned from downstream of catch basin CB190 to manhole MH189 with the Jetter-Vac at a water pressure of 1500 psi. Cleanout of the storm drain was continuous until there was no longer sediment in the wash water. A pressure washer was used to clean out catch basin CB190, and the sediment and water were removed by vacuum.

After the storm drain cleanout, a CCTV inspection of the storm drain downstream of MH189S was performed (Appendix C, Image 19). As with section CB190 to MH189N, an asphalt/concrete material was observed to be cemented to the walls and floor of the storm drain (Appendix C, Image 20). This material blocked the camera from advancing more than 7.5 feet down the storm drain. The remaining portion of the drain was examined using the telephoto zoom on the video camera. The result of the CCTV inspection showed no visible sediment within section CB190 to MH189S after the cleanout.

3.6.4.4 Section MH189 to CB188

The 12-inch storm drain from manhole MH189 to catch basin CB188 was cleaned on 9 August 2006 using the Jetter-Vac and pressure washer. Prior to cleanout, the 8-inch pipes at manhole MH189 were blocked with sandbags and plastic sheeting to prevent the upstream flushing of sediment during pressure jetting. Storm drain cleanout was initiated at manhole MH189 due to a vehicle blocking catch basin CB188. The storm drain was cleaned by power jetting at pressures ranging from 2,000 psi to 2,300 psi, and the section was cleaned in 25-foot intervals. A total of four cleanout cycles were conducted on section MH189 to CB188, and the final cleanout cycle included pressure-jetting manhole MH189. During cleanout of the storm drain, a significant quantity of sediment was removed from manhole MH189. This area was cleaned prior to the storm drain cleanout and was also power-washed and vacuumed after cleaning activities in section MH189 to CB188.

A CCTV inspection of the storm drain was performed by moving the camera upstream from catch basin CB188. The videos showed no significant amount of sediment remained within the section MH189 to CB188 after the cleanout (Appendix C, Image 21).

3.6.4.5 Section CB188 to Outfall

The 30-inch storm drain from catch basin CB188 to the 30-inch SWCS outfall at Convair Lagoon was cleaned from 10 August 2006 to 17 August 2006 using the Jetter-Vac and manual cleaning efforts. Due to the extended time period necessary for cleaning this section of the storm drain at the outfall, a trailer-mounted water tank was used to supply municipal water to the Jetter-Vac during cleanout activities. A triple-tier dam system was constructed at the outfall of the 30-inch SWCS using sandbags and plastic sheeting. This protective dam protected Convair Lagoon from discharge of sediment during cleanout of the storm drain.

A large amount of trash and debris was removed from the outfall by confined space workers prior to the start of cleanout activities. During the initial phase of the storm drain cleanout, the Jetter-Vac hose was unable to progress further than 147 feet upstream toward catch basin CB188. Confined space workers were able to enter the 30-inch storm drain through an access point located in the center of North Harbor Drive.

Upon inspection of the upstream portion of the storm drain, the workers discovered that the storm drain was blocked with plywood, trash, and large logs (Appendix C, Image 22). A total of five logs were removed ranging in size from 4.5 to 15 feet in length and 20 to 24 inches in diameter.

A variety of methods were used to remove the five logs that were obstructing the 30-inch SWCS. The most effective procedure used to remove the logs was through attachment of lag bolts into the logs and securing a steel cable to the lag bolts. A steel cable was attached to the Jetter-Vac hose in order to pull the cable upstream to the storm drain access point on North Harbor Drive. After the cable was in place, a confined space worker ratcheted lag bolts into each log prior to connecting the steel cable to the log. The steel cable was attached to the winch of a field truck, and the cable with attached log was pulled out of the storm drain (Appendix C, Image 23) After all the logs were removed, the Jetter-Vac was used for cleanout of the 30-inch storm drain. After the obstructions were removed, the Jetter-Vac hose was able to continue upstream until the entire section up to catch basin CB188 was clear of sediment and small debris.

Following cleanout of section CB188 to outfall, CCTV inspection from catch basin CB188 to the 30-inch SWCS outfall was performed, documenting that no visible sediment remained in the storm drain (Appendix C, Image 24).

3.6.5 60-inch SWCS to Convair Lagoon

The on-site portion of the 60-inch SWCS to Convair Lagoon was cleaned from 6 June 2006 to 13 October 2006, and the off-site sections beneath the Airport property were cleaned from 18 September to 5 October 2006. During cleanout of the 60-inch SWCS, a bladder was installed at the outfall to San Diego Bay to prevent water and sediment from exiting the storm drain during cleanout and to control tidal influence storm drain flow was diverted using a sandbag dam installed at the north property line approximately 67 feet north of catch basin CB-131. The diverted water was pumped through a filter and then discharged into the previously cleaned 30-inch storm drain. Cleanout of the on-site 60-inch storm drain to Convair Lagoon focused on the upstream sections initially and progressed downstream to the final storm drain section at Convair Lagoon. Most of the tributaries to the 60-inch storm drain were cleaned from the interior of the 60-inch storm drain, due to "skylight" style catch basins associated with this section of the storm drain, which prevented the insertion of cleaning equipment. Most of the cleanout of the 60-inch SWCS was performed by manually removing sediment through shoveling and sweeping to staged vacuum hoses. The tributaries were cleaned using the Jetter-Vac and removing the sediment by vacuum.

3.6.5.1 Roof Drain West of CB90

The 6-inch diameter concrete roof drain west of catch basin CB90 was cleaned on 8 August 2006 with the Jetter-Vac. A total of seven cleanout runs were made to remove sediment contained in the 590-foot roof drain.

A CCTV inspection of the drain was conducted on 17 August 2006 to verify the success of the cleanout procedure. A concrete obstruction prevented inspection of the entire drain, and only the first 100 feet of drain could be examined.

The results of the CCTV inspection revealed no visible sediment accumulation in the observable section of the storm drain following the cleanout (Appendix C, Images 25 and 26).

3.6.5.2 Section CB90 to CB96

The 6-inch diameter PVC storm drain between catch basin CB90 and catch basin CB96 was cleaned on 12 July 2006 using the Jetter-Vac, with subsequent removal of sediment by vacuum

A CCTV examination of this section was performed on 20 July 2006, and no visible sediment accumulation was evident in the storm drain after cleanout (Appendix C, Image 27).

3.6.5.3 Section CB89 to CB96

The 10-inch RCP storm drain between catch basin CB89 and catch basin CB96 was cleaned on 12 July 2006 and again on 17 August 2006 by high-pressure jetting using the Jetter-Vac.

A CCTV examination of this section was performed on 17 August 2006, and no visible sediment accumulation was evident in the storm drain after cleanout (Appendix C, Image 28).

3.6.5.4 Section CB92 to CB132

The 10-inch diameter RCP storm drain between catch basin CB92 and catch basin CB132 was cleaned on 13 July 2006 by high-pressure jetting using the Jetter-Vac.

A CCTV inspection of this section was performed on 20 July 2006, at which time small amounts of scaling were present along the walls of the storm drains (Appendix C, Image 29). No visible sediment accumulation was evident in the video.

3.6.5.5 Section CB93 to 60-inch Trunk Storm Drain

The 6-inch diameter RCP storm drain between catch basin CB93 and the 60-inch trunk storm drain was cleaned on 13 July 2006 using a jetting tip attached to a pressure washer.

A CCTV inspection of this section was performed on 20 July 2006, and trace amounts of scaling were present on the walls of the storm drain approximately 28 to 31 feet downstream of catch basin CB93 (Appendix C, Image 30). No visible sediment accumulation was evident in the section CB93 to the 60-inch trunk storm drain.

3.6.5.6 Section CB124 to CB123

The 8-inch diameter VCP storm drain from catch basin CB124 to catch basin CB123 was cleaned on 21 June 2006 by high-pressure jetting using the Jetter-Vac. A blockage located approximately 15 feet upstream of catch basin CB124 prevented advancing the Jetter-Vac hose further upstream to catch basin CB123.

A CCTV examination of the storm drain on 18 August 2006 revealed that the storm drain was collapsed (Appendix C, Image 31). There was no evidence of visible sediment accumulation between catch basin CB124 and the collapsed section of the storm drain.

3.6.5.7 Section CB124 to 60-inch Trunk Storm Drain

The 8-inch diameter VCP storm drain between catch basin CB124 and the 60-inch trunk storm drain was cleaned on 13 July 2006 and 14 July 2006 by high-pressure jetting using the Jetter-Vac. Sediment that was flushed into catch basin CB132 was transferred to the Jetter-Vac, which was located at catch basin CB132.

A CCTV visualization of section CB124 to the 60-inch trunk storm drain was completed on 18 August 2006. The video revealed there were several locations along the bottom of the line where the storm drain was completely eroded and the soil beneath the pipe was exposed (Appendix C, Image 32). No additional cleaning of the storm drain was attempted due to the condition of the storm drain.

Following the first rain event after termination of storm drain cleaning, a sinkhole appeared adjacent to catch basin CB132. The sinkhole appeared to have occurred from a collapse in the already eroded storm drain located downstream of catch basin CB124. Samples of sediment from the sinkhole, both from the surface and from within the 60-inch SWCS, were analyzed for PCBs and the resulting data is presented in Appendix C, Table 5. To prevent further influx of sediment into the 60-inch SWCS from the sinkhole, the connection of the 8-inch VCP storm drain to the 60-inch storm drain was cemented closed using a “rapid set” concrete mix. After the 8-inch outfall was sealed, a storm drain plug was inserted into the downstream side of catch basin CB124 to complete the abandonment of this section. The sinkhole was backfilled with sand and covered with visqueen after the abandonment of the storm drain. After abandoning this section of the storm drain, Airport Operations constructed a PVC manifold system to re-route all flow introduced by the eastern roof drain system located in Building 120. The manifold connects all roof drain downspouts along the eastern roof drain system and discharges storm water as surface runoff near catch basin CB144.

3.6.5.8 Section CB95 to CB96

The 6-inch diameter RCP storm drain between catch basin CB95 and catch basin CB96 was cleaned on 12 July 2006 by high-pressure jetting using the Jetter-Vac. A total of two cleanout runs were accomplished on the full length of the storm drain.

A CCTV examination of this section was performed on 10 August 2006, and no visible sediment accumulation was evident in the storm drain after cleanout (Appendix C, Image 33).

3.6.5.9 Section CB96 to CB131

The 12-inch diameter RCP storm drain between catch basin CB96 and catch basin CB131 was cleaned on 12 July 2006 and 13 July 2006 by high-pressure jetting using a Jetter-Vac. An obstruction located approximately 118 feet downstream of catch basin CB131 initially prevented the Jetter-Vac hose from advancing the full distance of the storm drain to catch basin CB96. A tether was attached to the hose, and the storm drain was cleaned by reversing the direction of the cleaning procedure. Sediment was progressively removed from the storm drain by stepping the Jetter-Vac hose from catch basin CB96 to catch basin CB131.

A CCTV examination of this section was performed on 20 July 2006, and no visible sediment accumulation was evident in the storm drain after cleanout (Appendix C, Image 34).

3.6.5.10 Section CB97 to CB99

The 6-inch diameter RCP storm drain between catch basin CB97 and catch basin CB99 was cleaned on 18 July 2006 and 19 July 2006 by using a pressure washer and the Jetter-Vac. The first day of storm drain cleanout was limited to 27 feet of storm drain downstream of catch basin CB97 due to obstructions in the storm drain. On the second day of storm drain cleaning, further obstruction in the storm drain allowed only the first 125 feet of storm drain downstream of catch basin CB97 to be cleaned. The section of storm drain between catch basin CB98 and catch basin CB99 was unobstructed, and all 28 feet of the storm drain downstream of catch basin CB98 to the 6-inch trunk were cleaned using the Jetter-Vac.

An attempt to perform a CCTV inspection of section CB97 to CB99 was unsuccessful due to the presence of trash in the storm drain, which prevented the pushing of the video camera through the storm drain. The trash could not be removed because of the inability to access the trash through "skylight" style storm drains. Although the entire distance of the storm drain between these two catch basins could not be examined, the video did show a degraded area in the storm drain. This damaged area in the storm drain was noted as a potential source of infiltrating sediment. A second attempt was made to video the storm drain in the opposite direction from catch basin CB99 toward catch basin CB97. This video attempt was also abandoned due to poor visibility in the storm drain (Appendix C, Images 35 and 36).

3.6.5.11 Section East of CB102

The 6-inch diameter RCP storm drain storm drain lateral east of catch basin CB102 was cleaned on 18 July 2006 by jetting with a pressure washer.

A CCTV inspection of this section was conducted on 20 July 2006. A 90-degree elbow in the storm drain located 33 feet from catch basin CB102 prevented further advancement of the video camera. In the short section that was examined, no significant sediment accumulation was evident (Appendix C, Image 37). An investigation in Building 120 showed no contributing catch basins to this section of storm drain.

3.6.5.12 Section CB104 to CB105

The 4-inch diameter VCP storm drain between catch basin CB104 and former catch basin CB105 was cleaned on 18 July 2006 by high-pressure jetting using the Jetter-Vac.

A CCTV reconnaissance was performed, and the video showed that a section of storm drain approximately 26 feet from catch basin CB104 had completely collapsed (Appendix C, Image 38).

3.6.5.13 Section CB104 to CB133

The 12-inch diameter RCP storm drain from catch basin CB104 to catch basin CB133 was cleaned on 18, 19, and 25 July 2006 by high-pressure jetting using the Jetter-Vac. A total of three cleanout runs were made each day on 18 July and 19 July by using the Jetter-Vac. A week later, five cleanout runs were made on 25 July 2006.

A CCTV reconnaissance was performed after the cleanout of section CB104 to CB133, and the video showed that sediment was removed from portions of this section of the storm drain (Appendix C, Image 39). A 90-degree turn north at catch basin CB104 prevented further cleaning of upstream sections. A sock-style BMP device was fitted onto the outfall at catch basin CB133 to trap and characterize any mobilized sediment.

3.6.5.14 Section South of CB196

The 6-inch diameter RCP storm drain south of catch basin CB196 was cleaned on 25 July 2006 by high-pressure jetting with the Jetter-Vac. A total of seven cleanout runs were made by stepping the Jetter-Vac hose through the entire length of this storm drain.

A CCTV inspection was attempted after the storm drain cleanout. However, video documentation of the section south of catch basin CB196 was limited to 27 feet downstream of the catch basin due to the presence of a pipe “offset” at this location. The junction of the 27-foot section of pipe with the section of pipe downstream of catch basin CB197 was at a sharp angle, which prevented further progression of the CCTV. Examination of the video for the 27-foot section downstream of catch basin CB196 showed no visible sediment accumulation in the storm drain (Appendix C, Image 40)

3.6.5.15 Section CB135 to 88 Feet West of Former CB198

The 12-inch diameter RCP storm drain from catch basin CB135 to 88 feet from the former catch basin CB198 was cleaned on 26 June 2006 by high-pressure jetting with the Jetter-Vac. An inflatable bladder was installed downstream of catch basin CB135 to prevent cleaning water from leaving the storm drain during storm drain cleanout activities. A total of two cleanout runs were performed on the storm drain with the Jetter-Vac.

A CCTV reconnaissance was performed after the cleanout activities, but only the first 88 feet of storm drain upstream of catch basin CB135 could be videoed. The storm drain turned northeast at a sharp angle at 88 feet, and the angle of the storm drain prevented further movement of the video camera. Inspection of the video from section CB135 to 88 feet from the former catch basin CB198 showed no visible accumulation of sediment (Appendix C, Image 41).

3.6.5.16 Section CB135 to 60-inch Trunk Storm Drain

The 12-inch diameter RCP storm drain from catch basin CB135 to the 60-inch trunk was cleaned on 18 July 2006 and 25 July 2006 by high-pressure jetting with the Jetter-Vac. A sandbag dam was installed downstream of catch basin CB133 in the 60-inch SWCS to control water flow during jetting activities. Two cleanout runs were made on

18 July 2006, and five cleanout runs were made on 25 July 2006 by jetting the storm drain between catch basin CB133 and catch basin CB135.

A CCTV inspection was attempted on 18 August 2006 on the section from CB135 to CB133. The video cable storm drain became entangled on itself, which prevented inspection of the full section. As a result, inspection was limited to the first 134 feet downstream of catch basin CB135. No visible sediment accumulation was evident in the video (Appendix C, Image 42).

3.6.5.17 Western Building 120 Roof Drain

The 6-inch diameter VCP roof drain on the west side of Building 120 was cleaned on 15 July 2006 and 16 July 2006 by using a jetting tip attached to a pressure washer. Access to the cleaning of the western roof drain was limited due to the existing above ground piping and the configuration of subsurface lines. These limitations did not allow the Jetter-Vac or pressure washer to directly pull sediment downstream for removal. Access to the roof drain was made by temporarily disconnecting downspout gutters inside Building 120. Two cleanout runs were made by first steam cleaning each section of roof drain. After steam cleaning, the roof drain was cleaned running the Jetter-Vac upstream from the 60-inch diameter storm drain toward the roof drain. An elbow in the storm drain at 144 feet limited cleanout to the first 144 feet of the storm drain. Further cleaning was performed by flushing the storm drain from upstream using the Jetter-Vac. The roof drain was flushed with approximately 1,300 gallons of water, starting at the north end of the roof drain and working toward the south end.

A CCTV inspection was performed on the roof drain on 18 July 2006 by running the video camera from the north end of the roof drain to the south end using the exposed downspout gutters. The video showed trace sediment accumulation remaining in the storm drain (Appendix C, Image 43). This remaining sediment was determined to be inaccessible without physical excavation of the storm drain line.

3.6.5.18 Eastern Building 120 Roof Drain

The 6-inch diameter VCP roof drain on the east side of Building 120 was cleaned on 16 and 18 July 2006 by using a jetting tip attached to a pressure washer. Access to the roof drain was made by temporarily disconnecting downspout gutters inside Building 120. Jetting began in the north end of the roof drain heading upstream but could not proceed past 100 feet.

Reconnaissance CCTV video showed standing water in the northern portion of the roof drain leading to catch basin CB123, suggesting a blockage or partial collapse of the roof drain storm drain, which prevented complete removal of sediment and water from the drain. No final CCTV inspection was performed of the eastern roof drain due to the blockage of the drain. This drain was later physically plugged and the roof drain discharge was re-routed to the ground surface in the vicinity of the 30-inch east SWCS by the Airport Authority.

3.6.5.19 Building 115 Roof Drain

The 4-inch diameter VCP roof drain in Building 115 was cleaned on 17 July 2006 by using a jetting tip attached to a pressure washer. The jetting tip could not be advanced farther than 10 feet down the storm drain due to a blockage. Attempts to clear the blockage were not successful, and the jetting tip eventually became lodged in the roof drain. When the cleanout process was abandoned and the jetting line was removed, the jetting tip and a 3-foot section of hose were lodged in the storm drain and became separated from the main jetting line.

3.6.5.20 Section CB131 to CB133

The 60-inch diameter concrete storm drain from catch basin CB131 to catch basin CB133 was manually cleaned from 12 July 2006 to 18 July 2006. Prior to cleanout, a sandbag dam was placed approximately 100 feet south of catch basin CB131. A second sandbag dam was placed approximately 300 feet south of catch basin CB131. The dams were installed to isolate sections of the 60-inch SWCS for targeted cleanup. There was a significant quantity of sediment located in this section of the storm drain, and confined space workers used shovels and carts to move the sediment to catch basin CB131 or catch basin CB133. The sediment was removed from the catch basins by the Jetter-Vac.

A CCTV survey of this section was performed on 20 July 2006 using the in-line camera. No significant sediment accumulation was evident in section CB131 to CB133 (Appendix C, Image 47).

3.6.5.21 Section CB133 to CB134

The 60-inch diameter RCP storm drain from catch basin CB133 to catch basin CB134 was manually cleaned on 19 July 2006. Sediment was removed by shoveling the material into carts and transporting it to catch basin CB133. The Jetter-Vac was used to remove the sediment after it was transported to catch basin CB133.

A CCTV survey of this section was performed on 13 October 2006 using the in-line camera. No significant sediment accumulation was evident in section CB133 to CB134 (Appendix C, Image 48).

3.6.5.22 Section CB134 to Outfall

The 60-inch diameter RCP storm drain from catch basin CB134 to the outfall at Convair Lagoon was manually cleaned from 21 July 2006 to 22 July 2006. An inflatable bladder was placed prior to the onset of cleaning any section of the 60-inch SWCS at the outfall of the 60-inch storm drain. This bladder was used to prevent cleanout water and sediment from entering Convair Lagoon. Confined space workers shoveled and used buckets or carts to move the sediment from the storm drain to catch basin CB134. The sediment was then removed from catch basin CB134 using the Jetter-Vac.

Extensive dewatering of this section of the storm drain was required both prior to cleanout of the storm drain and during cleaning activities. Cracks in the storm drain invert near the outfall and in pipe joints allowed for infiltration of groundwater at an estimated rate of 100 gallons per minute (gpm). Dewatering of the storm drain was continuous during the storm drain cleanout and was accomplished by placing vacuum trucks at Convair Lagoon and at catch basin CB134 and vacuuming the water from the storm drain.

The 60-inch storm drain cleanout from 10 October 2006 to 13 October 2006 was conducted based upon the analytical results of confirmatory sediment samples collected from the 60-inch storm drain on 30 August 2006 (Appendix C, Table 3). Six sediments samples were collected on 30 August 2006 and analyzed for PCBs. The location of the sediment samples were from 1 foot upstream of the 60-inch outfall to 100 feet upstream of the outfall. Results of the sediment analysis showed that PCBs were present in five of the six sediment samples at levels exceeding the Convair Lagoon WDR action level. Thus, the entire section of storm drain from catch basin CB134 to the outfall was re-cleaned.

Infiltration into the storm drain was controlled by placing an inflatable bladder approximately 15 feet north of the outfall and upstream of the cracks in the storm drain. A second bladder was placed upstream of catch basin CB133. Prior to cleaning, the storm drain was dewatered from catch basin CB133 by pumping water through a fine filter into catch basin CB152 located at the adjacent 30-inch diameter storm drain. Confined space workers shoveled and used buckets or carts to move the sediment from the storm drain to catch basin CB133. Sediment generated during the cleaning of the storm drain was transferred to a Guzzler truck instead of a Jetter-Vac truck. The

Guzzler truck was used because it provided extra storage capacity for the removed water and sediment (vs. a Jetter-Vac truck) and, thus, allowed for continuous work progress without a need to stop for transfer of water and sediment to holding bins. The bulk sediment was removed by pressure washing and sweeping the sediment to catch basin CB 134, where it was removed by vacuum. A final pressure washing of the storm drain was completed after sediment removal.

A CCTV survey of this section was performed on 13 October 2006 using the in-line camera. No significant sediment accumulation was evident in section CB134 to the outfall (Appendix C, Image 49).

3.6.6 60-inch SWCS/Airport Property

3.6.6.1 Section B8 to CB131

The 60-inch RCP storm drain from manhole B8 to manhole B11 was cleaned from 18 September 2006 to 5 October 2006. The storm drain cleanout was accomplished using both the Jetter-Vac washer and manual cleaning efforts. The access points for this cleanout were confined to manhole B8, located along the north side of the Airport, and catch basin CB131, which is located approximately 65 feet south of the Airport on the Former TRA site. The cleanout process was performed in two sections due to the large distance between these two catch basins. Plugs were installed in the storm drain to block inflow of water and solid material into the storm drain. The first plug was installed upstream of manhole B8, and the other plug was installed on the downstream side of catch basin CB131.

The cleanout of this section of the 60-inch storm drain required different jetting equipment than storm drain cleanouts from the other storm drains. A light aluminum tip that produced a high-velocity spray was used for a majority of the storm drain cleanout. A bullet-style tip with a more confined spray pattern was used in sections with deep sediment build-up. In addition, the Jetter-Vac was fitted with a snorkel-style tip that produced a consistent and more powerful vacuum for removing large quantities of water and sediment.

3.6.6.2 Section B8 South

The 60-inch RCP storm drain south from manhole B8 to 588 feet downstream of the manhole was cleaned from 18 September 2006 to 22 September 2006. This storm drain cleanout was conducted in an airport high security area, which made it necessary to leave the Jetter-Vac equipment on-site throughout the cleaning operations, thereby preventing mobilization/demobilization issues. Cleanout water from the Jetter-Vac truck was pumped into an on-site water storage truck, and a water transport truck was used to bring fresh water from a municipal fire hydrant to the Jetter-Vac.

This section of storm drain was cleaned using a combination of the Jetter-Vac, a pressure washer, and manual cleaning. The storm drain was first cleaned in 50-foot sections by flushing the storm drain with the Jetter-Vac at a water pressure of 2,500 psi. After significant quantities of sediment were pulled up to manhole B8, confined space workers manually shoveled and swept the material to the vicinity of manhole B8 for removal. After four days of cleaning activities, a sandbag dam was constructed at a location 588 feet downstream of manhole B8 to use as a reference point during CCTV inspection. The dam also prevented any sediment movement into the clean areas of the storm drain during cleaning of the southern portion of the storm drain under the Airport. After the confined space workers had removed the majority of the sediment, the workers reported that the storm drain contained areas of turbid water behind storm drain joints containing excess mortar. The Jetter-Vac hose was fitted with a fire hose nozzle, and this was used to manually flush the turbid water to manhole B8 for removal. Manhole B8 was cleaned with a pressure washer, and the sediment and turbid water was removed

A post-cleaning CCTV inspection confirmed that all visible sediment from manhole B8 to 588 feet downstream of the catch basin had been removed (Appendix C, Image 44).

3.6.6.3 Section CB131 North

The 60-inch RCP storm drain 710 feet north of catch basin CB131 was cleaned from 27 September 2006 to 5 October 2006. This section was cleaned using a combination of the Jetter-Vac, a pressure washer, and manual cleaning. Manhole B11 is located approximately 112 feet upstream of catch basin CB131. Due to daily airport traffic in close proximity to manhole B11, cleanout activities were staged from catch basin CB131 and progressed 710 feet north. The Jetter-Vac was used at a water pressure of 2,500 psi, and the storm drain was progressively cleaned upstream of catch basin CB131. When significant amounts of sediment were flushed to the area of manhole B11, confined space workers manually shoveled and transported the material to catch basin CB131 for removal. As with the northern section of the 60-inch storm drain, sediment-laden water tended to accumulate in areas where storm drain joints contained excess mortar. The final cleaning of the 60-inch storm drain was performed by confined space entry workers using brooms and a fire-hose nozzle to move turbid water to catch basin CB131 for removal.

After cleaning activities were completed, a CCTV inspection documented that the sediment in the 60 inch SWCS from section B11 North was successfully removed (Appendix C, Image 45).

After a significant storm event on 13 October 2006, a small volume of additional sediment accumulation was observed beneath a 21-inch tributary entering the 60-inch SWCS from the east, approximately 138-feet north of CB-131. During this time, the storm drain was plugged immediately south of CB-131 (Figure 3). After draining the accumulated storm water from the SWCS on 20 October 2006, sediment was sampled within the 21-inch tributary, and in several locations south of the tributary. Sediment from within the tributary contained 20.7 mg/kg PCBs, 18-feet south of the tributary contained 5.7 mg/kg PCBs, and 28-feet south of the tributary contained 0.38 mg/kg PCBs. This section of the storm drain was re-cleaned on 20 October 2006.

The 60-inch diameter RCP storm drain between catch basin CB131 and the southern Airport property storm drain was manually cleaned on 12 July 2006. There was a large volume of sediment in this section of the storm drain, with the thickness of the sediment estimated to be 3 to 6 inches. A sandbag dam was installed in the storm drain to prevent inflow of water from the Airport property into the previously cleaned sections of the 60-inch SWCS on Site. Confined space entry workers used shovels and brooms to transport the sediment to catch basin CB131, where it was removed with the Jetter-Vac. Water from the upstream side of the sandbag dam was pumped through a fine filter and disposed of in the adjacent 30-inch diameter storm drain at catch basin CB141.

A CCTV reconnaissance of the section of storm drain between the Airport property storm drain and CB131 was performed on 20 July 2006 using the in-storm drain camera. The video showed that there was no visible sediment accumulation in section CB131 to B11 (Appendix C, Image 46).

3.6.7 30-inch East SWCS to Convair Lagoon

The on-site portion of the 30-inch East SWCS to Convair Lagoon was cleaned from 22 March 2006 to 27 March 2006. During cleanout of this section, bladders and sandbag dams were used on the downstream side of catch basins to control wash water and prevent sediment from exiting the SWCS. For the final section from manhole MH201 to the outfall, a large sandbag dam was constructed at the outfall for downgradient control.

3.6.7.1 Sections CB155 through CB140

The 30-inch diameter RCP storm drain from catch basin CB140 to catch basin CB155 was cleaned on 23 March 2006 to 24 March 2006. Prior to cleaning the storm drain, sandbag dams were constructed downstream of each of the catch basins to capture sediment and water. The storm drain was cleaned using the Jetter-Vac and moving jetting hose in the storm drain from catch basin CB140 to catch basin CB155. This section was cleaned by pressure jetting until the cleanout water that was flushed into catch basin CB155 was clear of sediment downstream, indicating that the sediment had been removed.

Digital photographs taken in section CB140 to CB155 showed that no visible sediment accumulation was evident (Appendix C, Images 50, 51, 52, and 53).

3.6.7.2 Section CB160 to Section CB159

An attempt was made to clean the 8-inch PVC storm drain from catch basin CB160 to CB159 on 27 March 2006. This section of the storm drain could not be cleaned due to a collapsed storm drain located 15 feet upstream from catch basin CB160 (Appendix C, Image 54).

3.6.7.3 Section CB161 to CB160

The 8-inch RCP storm drain segment between catch basin CB161 and catch basin CB160 was cleaned 27 March 2006. Prior to cleaning, this section of storm drain was isolated by constructing a sandbag dam in the downstream side of catch basin CB161. The Jetter-Vac was staged at CB161, and cleaning proceeded by running the Jetter-Vac hose upstream to catch basin CB160 and flushing sediment downstream to catch basin CB161. Cleaning of the storm drain was continued until the water flowing into catch basin CB161 was clear of sediment. The sediment in catch basin CB161 was removed by vacuum.

Digital photographs taken in section CB161 to CB160 showed no visible sediment accumulation (Appendix C, Images 55 and 56).

3.6.7.4 Section MH201 to CB155

The 15-inch PVC storm drain segment between manhole MH201 and catch basin CB155 was cleaned on 27 March 2006. Prior to cleaning the storm drain, an inflatable bladder was placed in the downstream side of manhole MH201, and sandbags were placed in a lateral that leads to catch basin CB161. The Jetter Vac truck was then staged at manhole MH201, and cleaning proceeded by running the Jetter-Vac hose upstream to catch basin CB155. Sediment-laden water was flushed downstream to manhole MH201 and was removed by vacuum.

Digital photographs of section MH201 to CB155 showed that no visible sediment accumulation was evident (Appendix C, Images 57 and 58).

3.6.7.5 Section MH201 to CB161

The 12-inch diameter RCP storm drain segment between manhole MH201 and catch basin CB161 was cleaned on 27 March 2006. Prior to cleanout of the storm drain, an inflatable bladder was placed in the downstream side of manhole MH201, and sandbags were placed in the lateral that leads to catch basin CB155, which isolated the section of the storm drain to be cleaned. The Jetter-Vac truck was then staged at manhole MH201, and cleaning proceeded by moving the Jetter-Vac hose upstream to catch basin CB161 and flushing sediment downstream to manhole MH201, where it was then removed by vacuum. The storm drain was continuously cleaned until the water coming back downstream was clear, indicating that the sediment had been removed from the storm drain.

Digital photographs of section MH201 to CB161 showed that a vast majority of the sediment had been removed from this section (Appendix C, Images 59 and 60). However, the photo of section CB161 to MH201 in the downstream direction showed asphaltic debris remained cemented to the ceiling of the storm drain even after numerous attempts to remove the asphalt during cleaning with the Jetter-Vac.

3.6.7.6 Section 30-inch East SWCS from Convair Lagoon Outfall to MH201

The 30-inch diameter RCP storm drain segment between the Convair Lagoon outfall and manhole MH201 was cleaned on 27 March 2006 by a combination of the Jetter-Vac and manual removal of the sediment. Prior to cleaning the storm drain, sandbag dams were constructed at the outfall, the lateral to catch basin CB155, and the lateral to catch basin CB161. Placement of the sandbags was necessary to isolate this section of the drain for cleaning. Both the Jetter-Vac and a vacuum truck were staged at the outfall to the 30-inch storm drain to remove the large volume of water and sediment that was generated during cleaning activities. The Jetter-Vac hose was first run upstream toward manhole MH201 and then run in the reverse direction toward the outfall. Several times during the storm drain cleanout, confined space entry workers entered manhole MH201 to remove sediment that was flushed into the catch basin.

Digital photographs of section MH201 to the 30-inch outfall showed that no visible sediment accumulation remained after cleanout (Appendix C, Images 61 and 62).

3.6.8 30-inch SWCS to San Diego Bay

3.6.8.1 Section CB170 to CB168 and CB169

The 12-inch diameter RCP storm drain segment between catch basin CB170 and catch basin CB168 and CB169 was cleaned on 22 March 2006. Prior to cleaning the storm drain, a sandbag dam was constructed downstream of catch basin CB170 in order to isolate the section of drain to be cleaned. The Jetter-Vac truck was staged at CB170, and the jetting hose was run from catch basin CB170 upstream to catch basin CB168. Sediment and material that was flushed down to catch basin CB170 was removed by vacuum. Five cleaning runs were performed on this section of storm drain, after which the cleanout water was observed to be free of sediment and debris. Three of the cleaning runs were performed on the section from catch basin CB170 to catch basin CB168, and two of the cleanouts were performed on the section from catch basin CB170 to catch basin CB169.

Digital photographs of section CB170 to CB168 and CB169 showed that no visible sediment accumulation was evident in sections CB170 to CB168 and CB169 (Appendix C, Images 63, 64 and 65).

3.6.8.2 Section CB173 to CB170

The 12-inch diameter RCP storm drain section from catch basin CB173 to catch basin CB170 was cleaned on 22 March 2006 and 23 March 2006. Prior to cleaning the storm drains, an inflatable bladder was installed in the downstream side of catch basin CB173 and sandbag dams were constructed in the upstream side of catch basin CB170 to isolate individual sections during the cleaning process. The Jetter-Vac truck was staged at catch basin CB173 and cleaning proceeded by running the Jetter-Vac hose upstream and flushing the sediment back to the downstream catch basin. The cleanout procedure was run five times until the clean out water was free of sediment. The sediment was removed from catch basin CB173 after the storm drain was clean.

Digital photographs of section CB173 to CB170 showed that no visible sediment accumulation was evident in this section (Appendix C, Images 66, 67, 68, and 69).

3.6.8.3 Section CB174 to CB173

The 12-inch diameter RCP storm drain section from catch basin CB174 to catch basin CB173 was cleaned on 11 September 2006. Prior to cleaning the storm drain, inflatable bladders were installed in the upstream section of catch basin CB173 and the downstream section of catch basin CB175 to isolate the previously cleaned on-site storm drain section. An additional inflatable bladder was installed on the 18-inch diameter effluent storm drain that originates from the northwest Airport property and joins with catch basin CB174. Sandbag dams were used in conjunction with the bladders to assist in isolating the individual storm drain section during cleaning. The Jetter-Vac was staged at catch basin CB174, and cleaning proceeded by moving upstream to CB173 and flushing the sediment back to catch basin CB174. The cleaning process was repeated five times, and at the end of the fifth jetting of the storm drain, the cleanout water was free of sediment. The sediment that collected in catch basin CB174 was removed by vacuuming.

Digital photographs of section CB173 to CB170 showed that no visible sediment accumulation was evident in this section (Appendix C, Image 70).

3.6.8.4 Section CB175 to CB174

The 12-inch RCP storm drains from catch basin CB175 to catch basin CB174 were cleaned on 12 September 2006. This section of the storm drain contains two parallel 18-inch storm drains. Prior to the cleanout, an inflatable bladder was installed in the downstream side of CB175 and in the 18-inch diameter RCP storm drain lateral that originates from the southeast corner of the Airport property. A sandbag dam was also placed in the lateral that leads to catch basin CB173. The bladders and sandbags served to isolate section CB176 to CB174 during cleaning. This section was cleaned with the Jetter-Vac by running the jetting hose upstream to catch basin CB174 and moving sediment downstream to CB175. Sediment that was flushed from the storm drain was vacuumed out of catch basin CB175.

Digital photographs of section CB175 to CB174 showed that no visible sediment accumulation was evident in this section (Appendix C, Images 71 and 72).

3.6.8.5 CB175 to San Diego Bay Outfall

The 30-inch diameter RCP storm drain section from CB175 to the San Diego Bay outfall was cleaned from 6 November to 8 November 2006. Cleaning was performed by a combination of the Jetter-Vac and manual labor. Prior to the cleanout, an inflatable bladder was installed at the outfall of the storm drain, and standing water in the storm drain was removed. The 30-inch storm drain ends approximately 10 feet from the outfall, and the final section of the line is a 42-inch extension. The top of the 42-inch storm drain at the outfall is typically under water, and the storm drain is not exposed except during low tide. After the bladder was installed in the outfall, a "skylight" hole was cut in the apex of the 42-inch storm drain. This hole was located approximately 5 feet upstream from the outfall and was used to inset the Jetter-Vac jetting tip and vacuum storm drain. The Jetter-Vac was used to clean the storm drain from the "skylight" toward catch basin CB175. This section of the storm drain was cleaned seven times until the cleaning water was free of sediment. Material that was flushed down the storm drain was removed at the bladder by manually shoveling the sediment and vacuuming. Before initiating final demobilization, the hole in the top of the 42-inch storm drain was repaired using wire mesh, rebar, and concrete.

A CCTV reconnaissance was performed before and after the cleanout of the 30-inch section of pipe, and the video showed that all sediment was effectively removed from this part of the SCWS (Appendix C, Image 73).

3.6.9 Cleanout of 60-inch SWCS Outfall Channel

The 60-inch diameter RCP outfall channel is approximately 160 feet in length, and is the termination of the 60-inch SWCS at Convair Lagoon. This reach of storm drain outfall channel was separated into two sections for cleaning, an unconfined section and a confined section. The first 80 feet of the outfall channel is confined inside of an enclosed concrete pier. The next 30 feet of the pier contains open sides, which exposes the channel beneath the pier. At the end of the pier, the outfall channel continues for approximately 50 feet before terminating in Convair Lagoon. The initial cleanout of the channel focused on the confined part of the channel beneath the pier. The second part of the cleaning activities took place in the exposed portion of the channel. After completion of the outfall channel cleaning, a storm drain plug was left in the outfall to prevent the transport of sediment from the lagoon into the upstream portions of the cleaned 60-inch channel.

3.6.9.1 Enclosed Channel

The enclosed section of the 60-inch diameter RCP outfall channel was cleaned from 5 October 2006 to 9 October 2006. Cleaning activities began at the north side of the pier at the outfall plug. The storm drain outfall channel was cleaned by placing the hose from a high-flow water pipe into the storm drain outfall channel and pumping the water contained in the storm drain outfall channel into a dewatering bin and water storage trucks. After the storm drain outfall channel was dewatered, confined space workers entered the pier and shoveled sediment to the middle of the channel, where it could be removed by a vacuum pump. As cleaning of the 60-inch channel progressed downstream, the sediment in the storm drain outfall channel became more cohesive. A high-vacuum-storage vehicle (Guzzler) was brought to the site to remove the thick sediment. Confined space workers shoveled the sediment into a flex hose that was attached to the Guzzler. The floor of the outfall channel is not uniform, and the irregular surface prevented a “polished” removal of sediment. There remained approximately 0 to 2 inches of sediment in the channel after the final cleaning.

Sediment samples were taken from the end of the 60-inch storm drain channel to determine residual PCB concentrations in the channel sediment. Appendix C, Table 4 shows the results of analyzing channel sediment samples for PCBs.

3.6.9.2 Exposed Channel

The second part of the 60-inch outfall channel cleanout took place from 23 October 2006 to 26 October 2006. Higher tides during this cleaning stage allowed the use of a water pump to remove the bulk of the coarse-grained sediments in the storm drain. Highly cohesive sediments remained near the end of the channel, and the depth of the material was in excess of 2 feet. Confined space workers used buckets to scrape up the thick sediment, and the material was transferred to a dewatering bin. After the termination of cleaning activities, 3.5 inches of sediment remained at the end of the channel. Because the remaining sediment was cohesive and immobile, further removal was not pursued.

3.6.10 Seep Repair

During storm drain cleaning, two seeps were identified in the joints at the bottom of the 60-inch storm drain. One seep is located 5 feet from the outfall, and the second seep is located 15 feet from the outfall. Also, three small holes on the side of the storm drain and located 5 to 10 feet from the outfall were identified during the cleaning process. To repair the seeps, small pieces of rebar were place in the gap of the damaged joints and “fast-setting” concrete was placed in the gap to seal up the damaged joints. The holes in the side of the storm drain were repaired by filling the areas with the same concrete. Each of the repaired areas was smoothed flush with the wall of the storm drain to prevent entrapment of sediment and debris.

3.7 2007 SWCS Cleanout

In January 2007 H&A conducted a sampling event on the GD and former TDY properties. Sediment at catch basin D-7 of the GD property contained PCBs ranging from 2.37 mg/kg to 24.0 mg/kg. Five sediment samples collected from the walls, ceilings and floor of the Southern portion of the 60" SWCS under the Former TRA Site ranged from 2.79 mg/kg to 2,780 mg/kg (Appendix D, Figure 1). TDY performed a subsequent sampling event on 18 January 2007, collecting 26 samples which ranged in concentration from 0.33 mg/kg to 1,360 mg/kg (Appendix E, Figure 1).

A 150-foot long section of the 60-inch storm water conveyance system was cleaned in July 2007 to remove PCB impacted sediment beneath a lateral entering the 60-inch SWCS from the west at CB-133. Sediment was removed from approximately 10 feet north of CB-133 to 10 feet south of CB-134. During this cleanout event, a blind manhole was also cleaned to address TPH and PCB impacted sediment that was adhered to the walls of the former man way access (Appendix ZZ).

On 10 August 2007, H&A conducted an additional sampling event within the 60-inch SWCS, collecting an additional 7 samples from the walls ceilings and floors of the vicinity of the targeted cleanout event (Appendix E, Figure 1). These samples ranged from 0.249 mg/kg to 403 mg/kg. On 13 August 2007, TDY collected two samples from the 60-inch outfall trough, with concentrations of 54 mg/kg and 7.6 mg/kg (Appendix E, Figure 1).

3.8 Site Sweeping Results

The Site has been swept annually since 2006. Sediment data from the PCBs collected during these site sweeping events is presented below. The full reports are attached in Appendix ZZ.

In 2006, areas of the Site known to historically have concentrations of PCBs in surface sediment were pre-swept by hand. These sediments contained PCB concentrations up to 10 mg/kg of Aroclors 1248, 1254, and 1260. Eleven samples of sediment collected by a mechanized street sweeper contained PCB concentrations ranging from 0.047 mg/kg to 0.94 mg/kg of Aroclors 1248, 1254, and 1260 (Appendix F figure 1, Table 1).

In 2007, sediment was sampled from the vicinity of 15 catch basins across the Site prior to sweeping. Sediment concentrations ranged from non-detect (<0.011 mg/kg) to 5.8 mg/kg, with an average concentration of approximately 1.2 mg/kg. One sample contained a mixture of Aroclor 1254 and 1260, the remaining 13 samples with detected

PCBs were comprised entirely of Aroclor 1254. The site-wide sweeping data from this sweeping event contained an average PCB concentration of 0.24 mg/kg (Appendix G figure 1, Table 1)

Hand sweeping and vacuuming was conducted on 30 July 2008. These activities focused on removal of sediment which accumulated or had the potential to accumulate in the vicinity of BMPs at 10 catch basins. BMPs identified for sweeping had significant sediment and debris accumulation. These catch basins generally serviced large drainage areas and exhibited slow filtration/discharge rates. Sediment removal activities included sweeping up sediment and debris and then vacuuming the residual fine sediment with high efficiency vacuum units. A composite sample of the sediment collected during this activity contained 0.72 mg/kg total PCBs (Aroclor 1254) (Appendix H Figure 1, Table 1).

4. CURRENT SITE CONDITIONS

4.1 Building Material Data

4.1.1 2003 H&A Building Material Report

Between May and June 2003 surface sediment, concrete, and building paints were sampled for PCBs across the Site. Surface sediment concentrations from the 86 samples collected ranged from non-detect (ND< 0.033 mg/kg) to 237 mg/kg in CB-200 which was detected in the sample collected under the engine mount in Building 157. Concrete chip concentrations from the 33 samples collected ranged from non-detect (ND< 0.033 mg/kg) to 47 mg/kg in the southwestern portion of Building 120. Paint chip sample concentrations from the 18 samples collected ranged from non-detect (ND< 0.033 mg/kg) to 26 mg/kg. The highest sediment concentrations were reportedly located in the vicinity of Buildings 157, 158, 150, 105, 120, 126, and 166. The highest concrete chip concentrations were reportedly located in the vicinity of Building 157, 126, 166, 120, and 152. The highest paint chip concentrations were reportedly from Buildings 152, 156, 150, 140, 128, 166, and 182 (Appendix ZZ, Haley & Aldrich, 2003).

4.1.2 December 2005 Surface Source Sampling Event

In December 2005, TDY collected samples of surface sediment, paint, concrete joint compound, window sealant, asphalt, and felt material to identify ongoing sources of PCBs on-site. Three interior sediment samples ranged in concentration from 1.9 mg/kg to 12.0 mg/kg, with an average concentration of 7.2 mg/kg. Twenty-three exterior sediment samples ranged in concentration from non-detect (ND< 0.033 mg/kg) to 86 mg/kg with an average concentration of 23 mg/kg. All sediment samples were comprised of only Aroclors 1260, 1254, and 1248. An average concentration of 6.4 mg/kg was observed for Aroclor 1260, 24 mg/kg for Aroclor 1254, and 7.1 mg/kg for Aroclor 1248.

Paint concentrations ranged from non-detect (ND<0.37 mg/kg) to 10 mg/kg in 6 samples, with an average concentration of 5.7 mg/kg. The two felt samples collected contained PCB concentrations of non-detect (ND< 34 mg/kg) and 390 mg/kg, respectively. The window sealant contained a PCB concentration of 0.2 mg/kg and the asphalt aggregate contained 7.3 mg/kg PCBs. Two samples of concrete joint compound were collected. These samples contained PCB concentrations of non-detect (ND<3.3 mg/kg) and 7,800 mg/kg, respectively. The high concentration PCB joint compound was located immediately to the east of Building 166 and was comprised of Aroclors 1242, 1248 and 1254 (Appendix I).

4.1.3 January 2006 Off-Site Sampling Event

In January 2006, TDY collected samples of surface sediment, paint, asphalt, and joint compound to identify potential ongoing sources of PCBs off-site. The surface sediment was non-detect for PCBs. However, it had a high detection limit of 16 mg/kg due to matrix interference. The two paint chip samples contained PCB concentrations of 1.37 mg/kg and 1.27 mg/kg, respectively. The asphalt sample contained 2.76 mg/kg of PCBs. Of the eight samples of joint compound, six were non-detect for PCBs with elevated detection limits of 15 mg/kg. The remaining two samples contained 0.60 and 1.97 mg/kg of PCBs, respectively (Appendix J).

4.1.4 April 2006 Transite Sampling

In April 2006, TDY collected a sample of the transite paneling from the southern wall of Building 128. The material contained 6.22 mg/kg of total PCBs (Appendix I).

4.1.5 West Side Concrete Chip Sampling

In October 2005, H&A collected concrete samples from 50 locations across the western portion of the Site. PCB concentrations ranged from non-detect <0.033 mg/kg to 62 mg/kg (Appendix K, Figure 1).

4.1.6 Interim Excavation Activity Concrete Data

PCBs were detected in concrete chip samples collected from concrete removed during interim remedial actions in Buildings 156 and 180. The two samples from Building 156 contained 8.5 mg/kg and 13 mg/kg, respectively. The concrete sample from the Building 180 excavation contained 0.16 mg/kg (Appendix YY).

4.2 Site Sweeping Data

As described in Section 3.8, hand sweeping and vacuuming was conducted on 30 July 2008. These activities were focused on removal of sediment which accumulated or had the potential to accumulate in the vicinity of BMPs at 10 catch basins. BMPs identified for sweeping had significant sediment and debris accumulation. These catch basins generally serviced large drainage areas and exhibited slow filtration/discharge rates. Sediment removal activities included sweeping up sediment and debris and then vacuuming the residual fine sediment with high efficiency vacuum units. A composite sample of the sediment collected during this activity contained 0.72 mg/kg total PCBs (Appendix H).

4.3 Storm Water Conveyance System

4.3.1 Regional Upgradient PCB Data

Since the 2006 storm drain cleanout activities on the airport and former GD properties, only limited additional data has been collected from storm drain sediments. Sediment within the 60-inch SWCS on the MCRD site contained PCB concentrations ranging from 1.74 mg/kg to 1.02 mg/kg in April 2006 (Appendix L, Figure 1; Appendix ZZ, Geosyntec, 2006x). Following cleanout activities, two sediment samples were collected from catch basin D-7, located at the northern edge of the Former General Dynamics facility on 9 and 15 December 2006. These samples contained 0.33 mg/kg, and 4.95 mg/kg total PCBs, respectively. H&A collected three additional sediment samples from catch basin-D7 in January 2007 (Appendix D, Figure 1). Sediment within catch basin D7 contained a PCB concentration of 2.37 mg/kg. Sediment adhered to the walls of the catch basin contained a concentration of 11.2 mg/kg, and sediment within a tributary entering the catch basin from the southwest contained a concentration of 24.0 mg/kg.

4.3.2 Current 60-inch SWCS Data

4.3.2.1 Filter Sock Results

Filter socks were placed on all tributaries of the 54-inch and 60-inch SWCS in February 2007. These filter socks were inspected after significant rain events of 0.25" or greater. If sediment was observed in a sock of sufficient quantity to sample, the sediment was analyzed for PCBs. Sediment samples were collected from eight tributaries, at concentrations ranging from non-detect (<0.5 mg/kg) to 1,700 mg/kg. Two tributaries contained significantly elevated PCB concentrations. At CB-131, a tributary from the west contained 390 mg/kg of Aroclor 1248 and 160 mg/kg of Aroclor 1260. At CB-133, a tributary from the west contained 1,700 mg/kg Aroclor 1248. Both of these tributaries have been diverted, as described in the next section. None of the filter socks on tributaries draining to the 54-inch SWCS have contained sediment in a quantity sufficient to sample (Table 1; Appendix YY).

4.3.2.2 Storm Water Diversion Systems

Two diversion systems were installed to prevent further discharge of sediment from the storm drain tributaries with filter sock sediment samples containing significantly elevated PCB concentrations (550 and 1,700 mg/kg). The CB-104 diversion system consists of a plug at the tributary outfall at CB-133. A pump at the nearest upgradient catch basin (CB-104) automatically pumps storm water through a high efficiency filter and into a storage tank (Appendix M, Figure 1). This tank is sampled for PCBs to confirm the efficiency of the filter prior to discharge of the accumulated water in the storage tank to the 60-inch SWCS. The western tributary at CB-131 is also plugged. A sump pump is placed at CB-90 and discharges accumulated storm water back to CB-131 through a high efficiency filter (Appendix N, Figure 1). An in-line sampling container retains a portion of the post-filtration storm water effluent for PCB analysis. No PCBs have been detected in the filtered storm water (ND<1.0 ug/L) since the installation of the storm water diversion systems.

4.3.2.3 Chromatogram Interpretation

PCB chromatograms were compared for all the storm drain samples collected from bottom sediment samples in the 60-inch SWCS trunk line from the 19 January 2007 sampling event and from subsequent data collected from filter socks on 60-inch SWCS tributaries. These PCB chromatograms exhibited two visually distinct "fingerprints" (Appendix U). PCB chromatograms from sediment samples collected from the base of the 60-inch trunk line in the vicinity and immediately downgradient of CB-131 share a similar chromatogram pattern with sediments collected from a CB-131 tributary filter sock (flowing from CB-90). The PCBs within these samples were interpreted by the laboratory to be comprised primarily Aroclor 1248.

PCB chromatograms from sediment samples collected from the base of the 60-inch trunk line in the vicinity and immediately downgradient of CB-133 share a second chromatogram pattern which is similar to sediments collected from a CB-133 tributary filter sock (flowing from CB-104). The PCBs within these samples were interpreted by the laboratory to be comprised of a mix of Aroclors 1248 and 1260 (Figure 2, Appendix U). The chromatograms support that the two tributaries, which contained elevated levels of PCBs are the sources of the majority of the ongoing elevated PCB concentrations detected in the on-site portion of the 60-inch SWCS.

4.3.3 Current 54-inch SWCS Data

The 54-inch SWCS has been inspected on several occasions following the 2006 storm drain cleanout event. The storm drain was entered on 7/10/07, 12/21/07, and 1/10/08 to inspect and sample filter socks, and on 6/25/09 to patch seeps in the storm drain. Minimal re-accumulation of sediment was observed during these events. The greater slope of this SWCS (as compared to the 60-inch SWCS) and a smaller upstream reach, which is fully paved, have minimized sediment re-accumulation in the 54-inch SWCS. In contrast, the 60-inch SWCS has a much lower slope and has a 10-inch high weir between the southern Site boundary and the Convair Lagoon outfall, resulting in sediment re-accumulation which is much more pronounced than that which is observed in the 54-inch SWCS.

4.3.4 Storm Water Data

During the 2005-2009 monitoring period, storm water samples were collected from three designated storm water monitoring stations as specified in the Storm Water Pollution Prevention Plan and the CB 104 storm water holding tank during two representative storm events per wet season (Appendix ZZ). No PCBs were detected (ND<1.0 ug/L) in any of the samples which were collected. Storm water samples collected during the first storm event of the 2009-2010 storm season also contained no detectable PCBs at the designated monitoring locations (Appendix YY).

4.3.5 SWCS Infiltration Observations

During cleaning activities in the 54-inch diameter storm drain and the 60-inch diameter storm drain near Convair Lagoon, seeps were observed in several areas of the storm drains. The majority of the seeps occur at seams or joints in the storm drain or at storm drain lateral connections.

4.3.5.1 60-Inch Infiltration Observations

Two significant seeps were observed in the bottom of the 60-inch storm drain. The first seep was located approximately 5 feet from the outfall, and the second seep was located approximately 15 feet from the outfall. The infiltration rate for the seep located 15 feet from the outfall was estimated to be 85 gpm when water in the storm drain was evacuated. This rate is not indicative of seepage rates under ambient conditions. During cleaning activities, plugs were installed in the storm drain to isolate the storm drain from tidal influence. The difference in hydrostatic pressure between the rising/falling tide and the water level inside the storm drain caused water to flow into the seep. The constant flow of water into the seep also caused an influx of sediment to the storm drain. The 60-inch storm drain was dewatered during sediment cleaning activities. Observations of water levels in the catch basin and the concomitant infiltration rates were noted and are presented in Appendix C, Table 6. Because these two seeps were located at the base of the storm drain, beneath the water line, it was not possible to collect a discreet sample from the seeps. At the completion of the storm drain cleanout activities the two seeps from the 60-inch were plugged and repaired with a cement grout. No other seeps which produced a sufficient quantity of water to sample were identified within the 60-inch SWCS.

4.3.5.2 54-Inch SWCS Infiltration Observations

The 54-inch storm drain was also dewatered during sediment cleaning activities. During this time, water level measurements were taken at the catch basins located along the storm drain. Observations of water levels in the catch basin and the concomitant infiltration rates were noted and are presented in Appendix C, Table 6.

The RWQCB requested that the seeps be sampled to determine if the water entering the storm drains contained PCBs. On 15 June 2006, Geosyntec collected samples of water from the seeps located in the 54-inch diameter SWCS and in the 30-inch diameter storm drain originating from the Airport property as it connects to the 54-inch storm drain at catch basin CB63. The results from this sampling event are presented in Table 2. The following is an excerpt from the associated report. The full report and associated Figures and Tables can be found in Appendix ZZ.

Video surveillance of the 54-inch SWCS indicated water was seeping into the storm drain at joints along the drain and where the 30-inch lateral connects to the main 54-inch storm drain. NRC Environmental Services Inc. (NRC) personnel entered the 54-inch storm drain from CB- 63 in order to sample these seeps. Prior to entering the SWCS to collect storm drain seep samples, a water sample was taken at the outfall to Convair Lagoon on the south end of the 54-inch SWCS (OUTFALL-54). During a low tide, water flowing out of the 54-inch SWCS was collected immediately inside the opening to the storm drain. Immediately upon entering Catch Basin 63, a water sample was collected where the 30-inch lateral connects to the 54-inch storm drain pipe on the west side of CB-63 (CB63-30W). The invert elevation of the 30-inch lateral is elevated approximately 7 inches relative to the invert elevation of the 54-inch storm drain. Water was diverted from flow from the lateral and collected in sample jars. A sediment sample also was collected at this location (A-63E-30) (Appendix O, Figure 1). The seep samples were then collected at 18 feet and 264 feet south of CB-63 (CB63-18 and CB63-264, respectively). These locations were selected because they are the only locations where water was observed seeping into the 54-inch storm drain at sufficient quantities to allow sample collection. Flow rates were estimated at approximately 200 ml/min.

The seep sample collected approximately 18 feet south of CB-63 contained 53 ug/L total PCBs. No PCBs were detected at a seep 264 feet south of CB-63 or in a sample of water collected at the storm drain outfall into Convair Lagoon. Because the seep sample from 18 feet south of CB-63 was collected pre-storm drain cleanout, and was an unfiltered sample, a second sample was collected in February 2008. This sample was filtered and analyzed with a high resolution PCB congener method. This result indicated a total PCB concentration at the seep of 0.00933 ug/L. The method blank associated with this sample contained total PCBs of approximately 0.000992 ug/L. (Table 2, Appendix YY).

Groundwater was sampled at 30 monitor wells site wide in January 2010 and analyzed for PCBs by method 8082, ultra low level. During this sampling event no PCBs were detected at monitor well GT-4 located approximately 50 feet to the east of the seep location, or at any other well in the western half of the Site.

Based on these results, the initial sample results from CB63-18 appear to be related to PCBs associated with suspended sediment within the sample, which was subsequently cleaned out during the 2006 cleaning event.

4.3.5.3 54-Inch SWCS Seep Patching

On 25 June 2009, all seeping joints and break-in connections observed within the 54-inch SWCS were patched using a rapid-set hydraulic cement designed for repairing water seeps through concrete structures. Pins were installed surrounding each seep/break in connection to additionally anchor the concrete patches.

4.3.6 54-Inch SWCS Concrete Chip Data

In December 2005, H&A collected concrete chip samples from the 54-inch SWCS and several catch basins and tributaries which contribute to the 54-inch SWCS. The four concrete samples from the 54-inch SWCS and tributaries contained PCB concentrations ranging from 0.025 mg/kg to 3.34 mg/kg. The 7 concrete chip samples from catch basins contained PCB concentrations ranging from 0.032 mg/kg to 156 mg/kg (Appendix P, Figure 4).

4.3.7 Sediment Movement Monitoring Report

At the conclusion of storm drain cleanout activities, TDY began monitoring the migration and accumulation of sediment within the 60-inch SWCS to help determine the origin and general trend of sediment migration. The sediment movement monitoring plan was initially implemented in only the downgradient on-site locations while cleanout activities were still ongoing at General Dynamics (GD) on the northern portion of the SWCS. The initial monitoring locations included the 60-inch Outfall, CB-134, CB-132, and CB-131 (Appendix Q, Figure 2). CB-132 was added to monitoring schedule for four events to evaluate potential sediment contributions and migration from a sinkhole immediately south of CB-132.

After completion of the GD cleaning activities, sediment movement monitoring commenced at the remaining sample locations specified in the Sediment Movement Monitoring Plan, namely manhole B-8, and catch basin D-7. These locations were monitored by H&A and their sub-contractor, Ocean Blue Environmental. Geosyntec was not permitted to be present at the monitoring of B-8 and D-7 due to right of entry restrictions on the Airport property. However, Geosyntec did supply the camera, recording, and sampling devices to the Airport designees such that monitoring of these locations could proceed.

In February 2007, two additional locations in the 60-inch Outfall Channel were added to the monitoring schedule. These locations were located at the end and middle of the pier that extends over the northern half of the channel. These locations were monitored to evaluate changes to the sediment thickness in the channel. Sediment in the storm drain was monitored for a total of five months.

Sediment movement monitoring was conducted with the aid of a submersible video camera attached to a pole which was used to inspect the designated catch basins for sediment accumulation. The catch basin inspections were recorded on VHS tapes. The VHS tapes were later transferred to DVD format, which are available with the original Report (Geosyntec, 2007).

4.3.7.1 60-inch Outfall (End of Pier)

The monitoring point at the south end of the 60-inch SWCS pier was added to the monitoring program to evaluate sediment accumulation in the channel outfall (Appendix Q, Image1). The measured sediment thickness was 2 inches. The sediment thickness did not fluctuate during the monitoring period.

4.3.7.2 60-inch Outfall (Middle of Pier)

The monitoring point at the south end of the 60-inch SWCS pier was added to the monitoring program to further evaluate sediment accumulation in the channel outfall (Appendix Q, Figure 2). The thickness was measured below the center man way opening covered by a metal plate (Appendix Q-Image2) and ranged from trace to 1 inch (Appendix Q, Table1). No significant fluctuations were observed in the sediment accumulation over the monitoring period.

4.3.7.3 60-inch Outfall

The 60-inch outfall is located at the first man way access south of the discharge point of the 60-inch SWCS (Appendix Q, Figure 2, Image 3). This location was monitored throughout the entire monitoring period. The thickness measured at this location ranged from trace to 1 inch. No significant fluctuations were observed in the sediment accumulation over the monitoring period.

4.3.7.4 CB-134

CB-134 is located just south of Building 100 (Appendix Q, Figure 2, Image 4). The sediment thickness at this location stayed relatively consistent throughout the monitoring period with trace to 0.5 inches of accumulation.

4.3.7.5 CB-132

CB-132 was added to the Sediment Movement Monitoring Program during the first four events to evaluate potential migration of sediment from a ruptured lateral storm drain section just south of CB-132 (Appendix Q, Figure 2, Image 5). No evidence of northward migration of sediment was observed at CB-132.

4.3.7.6 CB-131

CB-131 is located at the northern part of the former TRA property (Appendix Q, Figure 2, Image 6). Sediment thickness ranged from trace to 0.5 inch over the monitoring period. This location has been used as an access point by Airport subcontractors who have apparently inadvertently knocked a small amount of gravel debris into the catch basin. This can be seen in the video from footage from this location. Otherwise sediment accumulation at this location stayed relatively consistent throughout the monitoring period.

4.3.7.7 B-8

Location B-8 is located on the northern part of Lindbergh Field (Appendix Q, Figure 2). This location was monitored by H&A and Ocean Blue Environmental. H&A provided Geosyntec with general observations and video records. Sediment thickness at location B-8 has gradually increased from trace to 4 inches in thickness following seasonal rain events (Appendix Q, Figure 3). The accumulation of sediment appeared to be migrating from upgradient sediment sources (Appendix Q, Table 1).

4.3.7.8 D-7

Location D-7 is located on the northern portion of the former General Dynamics property (Appendix Q, Figure 2). This location was monitored by H&A and Ocean Blue Environmental. H&A provided Geosyntec with general observations and video records. The thickness of sediment at location D-7 was initially 6 inches, increasing to 12 inches, before decreasing to 4 inches after a rain event on 27 December 2006 (Appendix Q, Figure 3). After additional rain events, the thickness continued to decrease to its lowest measured level of 1 inch on 3 March 2007. Since that time sediment has slowly increased apparently due to upgradient off-site sediment contributions (Appendix Q, Table 1).

4.3.7.9 Sediment Samples

In general, there was insufficient sediment volume to collect samples for analysis. However, on 9 and 15 December 2006, H&A collected sediment samples from location D-7. Grain size analyses from these samples indicate that the sediment in D-7 is primarily composed of medium to coarse grained sand under the USCS/ASTM soil classification system. Sediment analytical results from 9 December 2006 contained 0.33 mg/kg total PCBs. Sediment results from 15 December 2006 contained 4.95 mg/kg PCBs (Appendix ZZ)

4.3.7.10 Conclusions and Recommendations

Based on the data collected during the sediment movement monitoring, the most upgradient station, D-7, had a significant amount of sediment at the start of the program which initially increased in thickness and then decreased after a significant rain event on 27 December, 2006 (Appendix Q, Table 1 and Figure 3). A gradual increase in sediment thickness was subsequently observed in the next downgradient monitoring location, B-8. The sediment in the downgradient on-site locations has stayed at relatively the same thickness (trace to 1.0 inches) during the entire monitoring period. Thus, it appears that a significant slug of sediment in the 60-inch SWCS had moved from upgradient station D-7 to downgradient station B-8, but had not yet moved further to on-site locations.

4.4 Groundwater

4.4.1 Convair Lagoon Vicinity Results

In the third quarter of 2006, groundwater samples were collected from the three shallow Convair Lagoon monitor wells (MWCL-2, -4, and -6) for PCBs by EPA Method 8082. No PCBs were detected in these wells above the detection limits ranging from 0.043 to 0.24 ug/L. In the first quarter 2007, MWCL-8 was installed in the backfill of the 60-inch SWCS and sampled for PCBs by EPA Method 8082. No PCBs were detected during either of the 2007 semiannual monitoring events with similar reporting and detection limits. To further evaluate the potential for low-level PCBs in groundwater, filtered groundwater samples were collected from MWCL-8 and analyzed by EPA Method 1668A during the two semiannual monitoring events in 2008. During the first quarter 2008 the groundwater sample from MWCL-8 contained 0.00699 ug/L PCBs. During the third quarter 2008 the groundwater sample contained 0.0336 ug/L (Appendix ZZ).

PCBs were collected from all shallow groundwater monitor wells in the Convair Lagoon vicinity during the two semiannual monitoring events in 2009 with reported PCB concentrations ranging from non-detect <0.00358 ug/L to 0.00951 ug/L, however similar concentrations were also detected in associated method blanks (0.00680 ug/L to 0.00693 ug/L).

4.4.2 Area D Light Non-Aqueous Phase Liquid Results

In March 2008, a 10 x 15 x 9 foot excavation was performed in the central portion of Area D, to remove Light Non-Aqueous Phase Liquid (LNAPL) which was observed intermittently in monitor well TC4-WNC. The excavation was centered on this well and advanced to approximately 1 foot below the groundwater table. Available LNAPL was vacuumed from the excavation. A sample of the recovered LNAPL contained 4.0 mg/kg total PCBs (Appendix YY).

4.4.3 Building 120 South LNAPL Results

In August 2007, a 30- x 35- x 5-foot excavation was advanced in the vicinity of shallow soil TPH impacts. Confirmation results indicated elevated TPH concentrations above the RBC of 6,400 mg/kg in the bottom of the northwestern, northeastern, and southwestern quadrants, and in the southern and western side walls of the excavation. The excavation was expanded to the west and deepened to 7 feet in the impacted quadrants. A small accumulation of LNAPL was observed where the excavation intersected the water table in the southwestern quadrant of the excavation. The sample of the LNAPL contained approximately 10 mg/kg of total PCBs. Three test pits were subsequently advanced in March 2008 to a depth of 8 feet below ground surface. One test pit (TP-1) was approximately 75' to the northeast of the excavation, in the vicinity of a former drill press. The other two test pits were advanced immediately to the west and south of the excavation (TP-2 and TP-3, respectively). LNAPL samples were collected from each test pit. The LNAPL in the test pit adjacent to the drill press contained 8.6 mg/kg total PCBs. The LNAPL in the test pits to the west and south of the excavation contained 1.9 mg/kg and 6.9 mg/kg, respectively (Appendix YY).

4.4.4 Hydropunch Samples 120-GW-76/120-GW-77

Groundwater has been analyzed for PCBs in 41 samples collected from across the Site. Of these 41 samples, only two have contained detectable PCBs. These two unfiltered groundwater samples were collected from adjacent hydropunch samples 0120-GW-76 and 0120-GW-77 and contained PCB concentrations of 1.1 ug/L and 1.9 ug/L, respectively. The hydropunches were located adjacent to the 30-inch east SWCS, between Building 120 and Building 121. This SWCS was excavated and replaced in October 1988 through January 1989 due to high PCB concentrations identified within the storm drain. Because PCBs are relatively insoluble and tend to bond to fine grained particles, unfiltered groundwater samples are often significantly affected by suspended sediment within the sample. PCBs associated with the surrounding soil become attached to suspended sediment in unfiltered groundwater grab samples, leading to results that are biased high.

4.4.5 Site-Wide Groundwater Results

Groundwater samples were collected from 30 wells across the site in January 2010. These samples were analyzed for PCBs by EPA method 8082 (ultra low level). PCBs were not detected in any sample with the exception of B120-MW2 (Table 4), located at the southeast corner of Building 120, adjacent to the 30-inch East SWCS. Although this storm drain is located above the water table, historical PCB impacts in soils were identified in this vicinity when the storm drain was replaced in 1989.

4.5 <u>Soil</u>

4.5.1 Site Characterization Data

Of The 267 soil samples were collected across the Site and analyzed for PCBs, 51 contained detectable levels of PCBs. Concentrations ranged from non-detect to 290 mg/kg. Of these samples, only one exceeded the Site-specific RBC of 4.2 mg/kg (Appendix B, Figures 7S-33, 7S-34).

4.5.2 Area D Post-Ex Sampling

Soil samples were collected from each sidewall and from the base of the Area D excavation. Sidewall samples were collected at the water table, approximately 9 feet bgs. No PCBs were detected in any of the confirmation soil samples (<0.05 mg/kg) (Appendix YY).

4.5.3 Building 180 Post-Ex Sampling

Soil samples were collected from each sidewall and from the base of the Building 180 excavation. Sidewall samples were collected from an area of stained soil approximately 1 foot below ground surface. No PCBs were detected in the confirmation soil sample from the base of the excavation (<0.05 mg/kg). Sidewall samples contained TPH concentrations above the Site specific RBC and low concentrations of PCBs. No PCBs were detected (<0.05 mg/kg) on the north and east side walls, 0.059 mg/kg PCBs were detected on the southern wall, and 1.8 mg/kg PCBs were detected on the western wall (Appendix YY). The west side of the excavation is closest to the potential source of the TPH impacts within Building 180.

4.5.4 Building 120 South Post-Ex Sampling

Soil samples collected from the sidewalls of the test pits discussed in Section 4.5.4 contained PCBs at concentrations ranging from non-detect (ND<0.050 mg/kg) to 0.15 mg/kg. The 16 samples collected from the soil stockpile generated from the Building 120 South excavation contained PCB at concentrations ranging from 0.054 mg/kg to 0.120 mg/kg.

4.5.5 Building 156 Excavation and Confirmation Results

In August 2007, a 10- x 10- x 5-foot excavation was performed in the southwestern portion of Building 156 to remove the soil in the vicinity of a historical detection of PCBs in soil at a concentration of 290 mg/kg. Five confirmation samples were collected, one from each side wall and the base of the excavation. No PCBs were detected in any of the confirmation samples (Appendix YY).

4.5.6 2006 Sinkhole Sampling

On 16 October 2006, a sinkhole was observed north of Building 120 near the juncture of a storm drain tributary and the 60-inch SWCS. Video inspection inside the tributary showed that the bottom 1/3 of the storm drain tributary was missing for approximately 60 feet to the east of the 60-inch SWCS connection. During a physical inspection inside the 60-inch SWCS, an approximately 2.5 foot thick pile of sediment beneath the tributary outfall was observed. In the process of repairing the sink hole, the tributary was plugged both upgradient and downgradient of the collapsed section. The sediment within the 60-inch SWCS was sampled for PCBs and subsequently removed from the SWCS. A sample of the sediment was collected on 26 October 2006, contained 0.063 mg/kg PCBs (Appendix YY).

This pile was re-sampled on 19 January 2007. It was noted to be approximately 6-inches thick at its center, tapering to approximately 1-inch thick 15 feet in either direction. This sediment was at the same location observed and sampled on 26 October 2006. Two samples were collected at the middle point of the pile, one on the surface and one approximately 3 to 4 inches into the pile (Samples 17A and 17B, Appendix E, Figure 1). These samples contained PCBs concentrations of 2.4 mg/kg and 0.99 mg/kg, respectively.

4.5.7 60-Inch SWCS Backfill Sampling

During the 60-inch storm drain inspection on 18 January 2007, sediment samples were collected from all joints that appeared to have indications of groundwater infiltration (seeping) into the storm drain. Of the seven samples collected, two were found to contain PCBs at concentrations greater than 10 mg/kg. One sample, located approximately 30 feet south of the northern property boundary, contained a PCB concentration of 220 mg/kg. The second sample, located immediately north of CB-132, contained 46 mg/kg total PCBs. These locations were identified as likely areas where the potential for PCB migration into or out of the SWCS through the joints could be evaluated. If the source of these elevated impacts was from an exterior source to the SWCS, PCBs would be expected at equal or greater concentrations exterior to the SWCS. Soil samples were collected immediately east, west, and above the SWCS adjacent to each of these two joints, and analyzed for PCBs and TPH (Figure 1).

Two additional locations adjacent to the SWCS were also sampled based on surface visual evidence of potential impacts. In the south central portion of Building 120, there is evidence of a former floor drain which may have historically drained to the 60-inch SWCS. A sample was collected of the soil immediately adjacent to the juncture between this historical floor drain and the 60-inch SWCS. This location is approximately 120 feet west of the Building 120 south excavation which was performed for removal of elevated TPH impacts, where PCBs were observed in LNAPL. In the north central portion of Building 120, the 60-inch SWCS runs under a former machine foundation which is surrounded by heavily stained concrete. The soil backfill adjacent to the 60-inch SWCS was sampled in this vicinity (Figure 1). Finally, soil was sampled immediately north and south of a blind manhole located south of Building 100. This manhole contained historically high TPH and PCB concentrations in sediment samples scraped from the inside walls of the manhole (Figure 1). No TPH or PCBs were detected in any of the exterior SWCS soil samples collected during this investigation (Appendix YY).

4.5.8 2007 H&A Sub-Slab Sampling

In October 2007, H&A collected seven samples of soil immediately beneath concrete slabs heavily stained with oil from Building 120, one sample from Building 166, and one samples from Building 121. In addition, a concrete chip sample was collected from Building 121. Each sample was reportedly analyzed for TPH, BTEX, and PCBs. In Building 166 the sub-slab soil contained 1,200 mg/kg TPH, no BTEX and 0.296 mg/kg PCBs. In Building 120 the sub-slab soil contained between 450 mg/kg and 29,000 mg/kg TPH, BTEX concentrations ranging from non-detect to 24 ug/kg ethylbenzene and 117 ug/kg total xylenes. Only one sample contained detectable PCBs at a concentration of 0.185 mg/kg. In Building 121, the concrete chip contained 4,600 mg/kg TPH, and no detectable BTEX or PCBs. The sub-slab soil contained no detectable TPH, BTEX, or PCBs (Table 3).

4.5.9 2009 Soil Sampling at the Former General Dynamics LFP

As part of a Phase II Environmental Site Assessment in on the former General Dynamics LFP site, the Airport collected 41 soil samples from 26 locations at the GD LFP site. Soil samples were collected at depths ranging from approximately 0.5 to 10 feet bgs and analyzed for PCBs by EPA Method 8082. Aroclors 1016, 1248, 1254 and 1260 were detected in 20 (49%) of the soil samples at concentrations ranging from 0.054 to 0.51 mg/kg. Total PCB concentrations ranged from 0.054 to 0.62 mg/kg with an average detected total PCB concentration of 0.265 mg/kg (Appendix X, Table C-4, Plate 8). Below is a breakdown of the results by depth interval:

- 17 samples were collected in unpaved areas at a depth of 0.5 feet bgs (sample interval 0 to 1.0 feet bgs) and PCBs were detected in 12 (71 %) of these samples; the maximum total PCB concentration at this depth interval was 0.62 mg/kg;

- 17 soil samples were collected at depths between 1.5 and 2 feet bgs and PCBs were detected in 6 (35%) of these samples; the maximum total PCB concentration at this depth interval was 0.5 mg/kg;
- 5 soil samples were collected at 5 feet bgs and PCBs were detected in 2 (40%) of these samples; the maximum total PCB concentration at this depth interval was 0.08 mg/kg; and
- 2 soil samples were collected at 10 feet bgs and PCBs were not detected in these samples.

5. DESCRIPTION OF PLANNED SITE DEMOLITION

5.1 Scope of Site Demolition Activities

Site demolition activities are currently planned to begin in the 1st quarter 2010. The scope of the demolition activities include removal of all above grade structures and appurtenances, followed by removal of all concrete slabs, foundations, utilities, and storm water conveyance systems, with the exception of the main trunk of the 60-inch and 54-inch SWCS. The 30-inch tributary which enters the 54-inch SWCS from the west, is currently proposed to be removed and replaced. During demolition activities a berm will be installed around the Site perimeter to prevent storm water runoff/run-on all storm drain systems will be sealed. Storm water runoff will be collected, treated, and discharged to the sanitary sewer system.

All PCB impacted concrete will be removed from the Site, however some uncontaminated concrete may be crushed and re-used as sub-base with import fill, followed by the placement of 1.5 to 2 inches of asphalt or overlay or other suitable surface treatment to minimize dust generation and runoff of surface sediment from the Site. Low Impact Design (LID) BMPs consistent with SUSWMP requirements are also anticipated to be implemented post-demolition to encourage infiltration of storm water on-site and reduce runoff and minimize storm drain impacts.

5.2 Post Demolition Site Condition

EIR Section 4.7.3.3.1 discusses the anticipated effects of the proposed project on overall erosion/sedimentation rates from the Site:

Currently, the existing storm drain inlets are protected with Inlet Protection BMPs to help reduce the potential of discharging pollutants and other harmful contaminants to receiving waters (e.g., Convair Lagoon, San Diego Bay). Due to the temporary nature of the Proposed Project, erosion and sedimentation rates are not expected to change for the Project site. During demolition activities, site erosion control will be developed as part of the construction-related SWPPP. The Project site will be stabilized with an asphalt overlay or suitable surface treatment that will help protect the Project site from stormwater runoff that can potentially absorb pollutants before discharging to receiving waters. In the post-Project condition, the land use cover type will be of a similar nature in function to the existing Project site conditions. Thus, potential impacts from erosion and sedimentation are considered less than significant.

The Airport has further clarified their anticipated preparation of the Site following demolition in the following way:

The EIR, in general, describes the worst case scenario in its environmental assessments, including language regarding stormwater discharges, such as: "finding that the coefficient of runoff will not change in the final site disposition." In actuality, the Airport intends to provide as much pervious surfaces as possible on the site to reduce runoff and follow the LID recommendations found in the recently adopted Countywide SUSMP.

6. SUMMARY

Many studies have been performed to evaluate the source, fate, and transport of PCBs at the Site. These studies have investigated On- and Off-Site sediment impacts throughout the SWCS, building materials (paint, concrete, joint compound), surface sediments, soil, and groundwater. Based on these studies, a Conceptual Site Model (CSM) has been prepared.

6.1 Conceptual Site Model

The PCB CSM has been refined to graphically illustrate the known PCB sources and pathways at the Site, as well as the media potentially containing ambient PCB concentrations (Figure 3). This CSM is based on the extensive Site investigations which have been performed as described in Section 2. The sources illustrated on Figure 3 are described below.

Building Materials: Moderate concentrations of PCBs, up to about 10 mg/kg have been identified in building material, such as paint and transite siding. Higher concentrations of PCBs have been identified in on-site concrete, up to approximately 160 mg/kg and in concrete joint material up to 7,800 mg/kg. As the Site ages, these materials have weathered to varying degrees, contributing to ongoing low to moderate PCB concentrations in surface sediment. These sources will be removed during Site demolition.

Surface Sediment: While the site is over 90% paved, sediment accumulates across the surface of the site through a mixture of atmospheric deposition and weathering of building structures and deposition of organic detritus from on-site landscaping. This sediment contains moderate concentrations of PCBs with concentrations up to approximately 6 mg/kg. However, the majority of sediment on site contains PCB concentrations of less than 1 mg/kg. The source of PCBs to surface sediment will be removed during Site demolition.

SWCS Sediment: Storm drain sediment continues to contain significant PCB impacts with concentrations up to approximately 1,700 mg/kg in the 60-inch SWCS. The high PCB concentration sediment data has been identified with storm drain tributaries which were not able to be completely cleaned through historical storm drain cleanout efforts due to the storm drain construction and obstructions within the drains. These tributaries are currently disconnected from the SWCS and all tributaries will be removed during Site demolition. The 30-inch SWCS western tributary to the 54-inch SWCS will be removed and replaced. The only remaining original storm drains within the site boundary will be the 54-inch and 60-inch SWCS. Moderate concentrations of PCBs have also been identified in upgradient off-site storm drain sediment samples within the 60-inch SWCS.

Soil: PCB impacts in soil are not widespread. Site characterization data shows relatively few areas with localized PCB impacts, which have been largely addressed by historical removal actions. Remaining impacts include areas in Building 120 and south of Building 180 where moderate concentrations of PCBs from 5-10 mg/kg have been observed associated with TPH impacts in soil. Post-excavation sample results also indicate residual PCB impacts in soil in the vicinity of the historical 30-inch East SWCS excavation.

Groundwater: Groundwater was sampled for PCBs site-wide in January 2010. Detectable concentrations of PCBs were only found in one monitor well, located southeast of Building 120, adjacent to an area of known soil PCB impacts in the vicinity of the 30-inch east SWCS. Trace concentrations of PCBs have also been detected in groundwater in the vicinity of Convair Lagoon.

Rainfall: Current storm water sampling data have not contained detectable levels of PCBs, however ambient concentrations of PCBs are commonly observed at trace levels in urban rainfall due to the ubiquitous presence of PCBs at low levels throughout the global environment.

Based on this CSM, the currently recognized sources of PCBs at the site can be divided into several categories, on-site sources will be removed through the Site demolition process, Other on-site sources which will be addressed through site remediation activities, and off-site and ambient sources which may continue to contribute to PCBs in the vicinity of the site after demolition and remediation have been completed.

On-Site to be Removed by Demolition:

Building Materials
• Concrete joint compound with concentrations of approximately 7,800 mg/kg; • On-site concrete with concentrations up to approximately 160 mg/kg; • Building paint with concentrations up to approximately 10 mg/kg; and • Transite siding with concentrations up to approximately 6.2 mg/kg.
Sediment
• On-Site tributaries with sediment concentrations up to 1,700 mg/kg. • On-site surface sediment with concentrations up to approximately 6 mg/kg.

On-Site Other:

Soil
• On-site soil in the vicinity of the 30-inch East SWCS.
Sediment
• On-site 60-inch SWCS System Sediment, with concentrations up to approximately 1,400 mg/kg Total PCBs.
Groundwater
• On-site Groundwater with concentrations up to approximately 30 ug/L; • LNAPL on-site with concentrations up to approximately 9 mg/L; and • Convair Lagoon vicinity groundwater with concentrations of less than 10 ng/L.

Off-Site:

Building Materials
• Off-site joint compound, paint, asphalt with concentrations up to approximately 2 mg/kg.
Sediment:
• Off-Site SWCS system sediment, with concentrations up to approximately 20 mg/kg; and • Off-Site Surface sediment with concentrations up to approximately 2 mg/kg.
Soil:
• Off-Site Soil, with Concentrations up to approximately 0.5 mg/kg.

Ambient:

Rainfall
• Potential atmospheric deposition of PCBs through rainfall, with concentrations up to about 0.25 ug/L (WHO, 1992).

The on-site sources expected to remain after demolition are evaluated in the Risk assessment and the sources with potentially complete post-demolition exposure pathways are further evaluated for potential remedial alternatives in the RI/FS. Future on-site exposure pathways evaluated include commercial/industrial workers, landscapers, trench workers, and construction workers. Potential pathways for off-site migration are also evaluated, including:

Groundwater/Seep:

- Migration of impacted groundwater in the shallow/deep interval from the Site to Convair Lagoon (discharge to surface water and/or pore water);
- Migration of impacted groundwater from the Site to the SWCS backfill material followed by discharge into Convair Lagoon; and
- Migration of impacted groundwater from the Site to the SWCS (i.e. seeps) followed by discharge into Convair Lagoon.

Soil/Sediment

- Migration of impacted soil/sediment from the surface of the site to the SWCS followed by discharge into San Diego Bay;
- Migration of impacted storm drain backfill material to the SWCS followed by discharge into San Diego Bay; and
- Migration of impacted sediment currently within the SWCS followed by discharge into San Diego Bay.

7. REFERENCES

Brown and Caldwell and MEC. 2002. San Diego Unified Port District Convair Lagoon PCB Technical Report. January.

Brown and Caldwell Consultants. 1994. Phase I Baseline Assessment, Parts I and II General Dynamics Convair. November, 1994.

City of San Diego, Storm Water Pollution Prevention Program. 2002b. Work Plan for the Investigation of Exceedances of the PCB Water Quality Objectives on the Convair Lagoon Sand Cap. January.

Department of Toxic Substances Control, 2003. Risk Assessment of Polychlorinated Biphenyls at Hazardous Waste Sites. March, 2003.

Geosyntec Consultants (Geosyntec). 2010. Risk Assessment Appendix A, Evaluation of Potential Soil/Sediment and Groundwater Impacts to Convair Lagoon, 2701 North Harbor Drive, San Diego, California 92101. March.

Geosyntec, 2002. PCB Investigation Technical Report, Former Teledyne Ryan Aeronautical Facility, 2701 North Harbor Drive, San Diego, California 92101. 30 April.

Geosyntec, 2006. Storm Drain Cleanout Work Plan, 2701 North Harbor Drive, San Diego, California 92101. 21 February

Geosyntec, 2007. Storm Drain Cleanout Report, Airport/Former Teledyne Ryan Aeronautical Facility, 2701 North Harbor Drive, San Diego, California 92101. 16 March.

Haley & Aldrich. 2004. Baseline Site-Wide Investigation, Teledyne Ryan Aeronautical, 2701 North Harbor Drive, San Diego, California 92101. 4 August.

Julien, Pierre Y. 1998. Erosion and Sediment, pp. 188-119. Cambridge University Press, Cambridge.

Kinnetic Laboratories Incorporated, 2002. Joint Stormwater Agency Project to Study Urban Sources of Mercury, PCBs, and Organochlorine Pesticides. April 2002.

Laidlaw Environmental Services of California, Inc. 1997a. Letter to Randy Venier, Teledyne/Ryan Aeronautical, Inc., from Donald K. Ostrand, Project Manager. *Removal of PCB Contaminated Material From the 30 Inch Storm Drain.* 31 March.

Laidlaw Environmental Services of California, Inc. Undated. *Teledyne Ryan Aeronautical. Storm Drain Sediment Removal Project, PROJECT SUMMARY*. (retrieved on 8 April 2002 from RWQCB correspondence file)

National Oceanic and Atmospheric Administration. 2002. Tide Predictions for San Diego, California. http://co-ops.nos.noaa.goc/tides/westSD.html. 12 April.

Port of San Diego. 1997. Letter from Ralph T. Hicks, Director Planning & Environmental Management, to Randy Venier of TRA. Sediment and Disposal of PCB Containing Storm Drain Sediment. 15 May.

Regional Water Quality Control Board. 1986. Cleanup and Abatement Order No. 86-92 for Teledyne Ryan Aeronautical Near Lindbergh Field, San Diego County. 17 October 1986.

Regional Water Quality Control Board, San Diego Region. 1987a. Addendum No. 1 To Cleanout and Abatement Order No. 86-92 For Teledyne Ryan Aeronautical Near Lindbergh Field, San Diego County. 2 July.

Shaw Environmental Inc. 2003. Site Evaluation and Request for Case Closure: Area D, Former Teledyne Ryan Aeronautical Facility, 2701 Harbor Drive, San Diego, California. Report No. SDCDEH Case No. H00419-001. August 27, 2003.

Schwab, Fred, and Prothero, Donald R. 1996. Sedimentary Geology: An Introduction to Sedimentary Rocks and Stratigraphy, p. 33. W.H. Freeman and Company. New York.

Teledyne Ryan Aeronautical. 1972. Map: Teledyne Ryan Aeronautical Company, San Diego, CA. 29 September.

Teledyne Ryan Aeronautical. 1989. Daily log *Remediation – 12/15 Storm Drain*.

Teledyne Ryan Aeronautical. 1991. Letter to Art Coe, Executive Director, Regional Water Quality Control Board, San Diego Region, from J. Palmer, Manager, Environmental Affairs. Letter to J. Palmer, Dtd. 4/30/91 and Telephone Conversation with D. Barker, Dtd. 5/991. 20 May.

World Health Organization, 1992. IPCS International Programme on Chemical Safety Health and Safety Guide No. 68, PCBs and PCTs.

TABLES

Table 1
Filter Sock Sample Results

		CB-64	CB-67E	CB-131W			CB-132S	CB-132N1	CB-133E			CB-N133 SE	CB-133W(top)		CB-133 W (bottom)	CB-188W	
Parameter	Units	4/29/2009	4/29/2009	2/1/2007	12/21/2007	4/11/2008	12/27/2007	4/29/2009	12/27/2007	12/10/2008	4/29/2009	2/6/2008	12/27/2007	12/10/2008	2/1/2007	12/10/2008	4/29/2009
Polychlorinated Biphenyls																	
Aroclor 1016	mg/kg	ND<0.25	ND<0.05	ND<0.5	ND<0.5	ND<250	ND<0.25	ND<0.25	ND<0.05	ND<0.5	ND<0.05	ND<0.25	ND<0.05	ND<0.5	ND<25	ND<0.5	ND<0.05
Aroclor 1221	mg/kg	ND<0.25	ND<0.05	ND<0.5	ND<0.5	ND<250	ND<0.25	ND<0.25	ND<0.05	ND<0.5	ND<0.05	ND<0.25	ND<0.05	ND<0.5	ND<25	ND<0.5	ND<0.05
Aroclor 1232	mg/kg	ND<0.25	ND<0.05	ND<0.5	ND<0.5	ND<250	ND<0.25	ND<0.25	ND<0.05	ND<0.5	ND<0.05	ND<0.25	ND<0.05	ND<0.5	ND<25	ND<0.5	ND<0.05
Aroclor 1242	mg/kg	ND<0.25	ND<0.05	ND<0.5	ND<0.5	ND<250	ND<0.25	ND<0.25	ND<0.05	ND<0.5	ND<0.05	ND<0.25	ND<0.05	ND<0.5	ND<25	ND<0.5	ND<0.05
Aroclor 1248	mg/kg	ND<0.25	ND<0.05	5.5	14	1,700	1.4	ND<0.25	0.14	ND<0.5	ND<0.05	1.4	ND<0.05	ND<0.5	390	ND<0.5	ND<0.05
Aroclor 1254	mg/kg	3.6	0.16	ND<0.5	ND<0.5	ND<250	ND<0.25	1.7	ND<0.05	ND<0.5	ND<0.05	ND<0.25	ND<0.05	ND<0.5	ND<25	ND<0.5	ND<0.05
Aroclor 1260	mg/kg	ND<0.25	ND<0.05	ND<0.5	4.7	ND<250	1.6	ND<0.25	ND<0.05	ND<0.5	ND<0.05	2.6	ND<0.05	ND<0.5	160	ND<0.5	ND<0.05
Aroclor 1262	mg/kg	ND<0.25	ND<0.05	ND<0.5	ND<0.5	ND<250	ND<0.25	ND<0.25	ND<0.05	ND<0.5	ND<0.05	ND<0.25	ND<0.05	ND<0.5	ND<25	ND<0.5	ND<0.05

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Table 2
54-inch SWCS Seep Sample Results
Airport/Former Teledyne Ryan Aeronatical Site
2701 North Harbor Drive
San Diego, California

Parameter	Groundwater ESL	OUTFALL-54 6/15/2006 µg/L	CB63-18 6/15/2006 µg/L	CB63-18 2/6/2008 µg/L	CB63-264 6/15/2006 µg/L	CB63-30W 6/15/2006 µg/L
Metals						
Antimony	500	20	-	-	-	-
Arsenic	36	**61**	-	-	-	-
Barium	1000	43	-	-	-	-
Cobalt	3	**9.3**	-	-	-	-
Copper	3.1	**5.7**	-	-	-	-
Molybdenum	240	12	-	-	-	-
Selenium	71	60	-	-	-	-
Thallium	20	0.024	-	-	-	-
Vanadium	19	5.5	-	-	-	-
Volatile Organic Compounds (VOCs)						
1,1-Dichloroethane	47	ND<0.12	0.56	-	ND<0.12	ND<0.12
Benzene	350	ND<0.12	0.87	-	ND<0.12	ND<0.12
cis-1,2-Dichloroethene	590	ND<0.17	3.6	-	ND<0.17	ND<0.17
trans-1,2-Dichloroethene	590	ND<0.16	0.32	-	ND<0.16	ND<0.16
Vinyl chloride	780	ND<0.22	9.2	-	ND<0.22	ND<0.22
Semi Volatile Organic Compounds (SVOCs)						
1,4-Dioxane	50000	0.96	13	-	ND<0.41	0.54
Aniline	-	ND<0.34	ND<0.34	-	ND<0.34	0.37
Bis(2-ethylhexyl) Phthalate	32	ND<0.30	ND<0.30	-	0.36	2.1
Diethyl Phthalate	1.7	ND<0.28	ND<0.28	-	ND<0.28	0.8
Polychlorinated Biphenyls (PCBs)						
Total PCBs	0.03	ND<1.0	**53**	0.00933	ND<1.0	-

ug/L - Microgram per liter
ND<0.081 - Not detected at value greater than the Reporting Limit
- Not analyzed
Only constituents detected are shown
Bolded Constituents Exceed SF Bay ESL

Table 3
H A Sub Slab Sampling Results
October 2007

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Parameter	Units	0166_SC1_SO_005_100507_01	0120_SC1_SO_005_100507_01	0120_SC2_SO_005_100507_01	0120_SC3_SO_005_100507_01	0120_SC4_SO_005_100507_01
		10/5/2007	10/5/2007	10/5/2007	10/5/2007	10/5/2007
Hydrocarbon Chain Identification						
T/R Hydrocarbons: C8-C10	mg/kg	ND<10	ND<100	ND<100	ND<10	ND<200
T/R Hydrocarbons: C10-C18	mg/kg	19	130	ND<100	29	510
T/R Hydrocarbons: C18-C28	mg/kg	290	3600	2100	810	12000
T/R Hydrocarbons: C28-C36	mg/kg	640	3400	4000	540	9800
T/R Hydrocarbons: C36-C40	mg/kg	250	640	1600	110	1300
T/R Hydrocarbons: C8-C40 Total	mg/kg	1200	7700	7700	1500	20000
Gasoline Range Organics	mg/kg	ND<0.19	ND<0.19	ND<0.19	ND<0.19	ND<0.19
Volatile Organic Compounds						
Benzene	ug/kg	ND<0.97	ND<0.97	ND<0.97	ND<0.97	ND<0.97
Ethylbenzene	ug/kg	ND<1.1	ND<1.1	ND<1.1	1.1 J	ND<1.1
m,p-Xylene	ug/kg	ND<1.9	ND<1.9	ND<1.9	3.7 J	ND<1.9
o-Xylene	ug/kg	ND<0.96	ND<0.96	ND<0.96	1.2 J	ND<0.96
Toluene	ug/kg	ND<0.96	ND<0.96	ND<0.96	ND<0.96	ND<0.96
Polychlorinated Biphenyls						
Aroclor 1016	mg/kg	ND<0.0036	ND<0.0018	ND<0.0018	ND<0.0018	ND<0.0036
Aroclor 1221	mg/kg	ND<0.0088	ND<0.0044	ND<0.0044	ND<0.0044	ND<0.0088
Aroclor 1232	mg/kg	ND<0.0055	ND<0.0027	ND<0.0027	ND<0.0027	ND<0.0055
Aroclor 1242	mg/kg	0.070	ND<0.0020	ND<0.0020	ND<0.0020	ND<0.0039
Aroclor 1248	mg/kg	ND<0.0037	ND<0.0019	ND<0.0019	ND<0.0019	ND<0.0037
Aroclor 1254	mg/kg	0.056	ND<0.0027	ND<0.0027	ND<0.0027	0.075
Aroclor 1260	mg/kg	0.170	ND<0.0016	ND<0.0016	ND<0.0016	0.110
Aroclor 1262	mg/kg	ND<0.0023	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0023

Table 3
H A Sub Slab Sampling Results
October 2007

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Parameter	Units	0120_SC5_SO_005_100507_01 10/5/2007	0120_SC6_SO_005_100507_01 10/5/2007	0120_SC7_SO_005_100507_01 10/5/2007	0121_CC1_SO_005_100507_01 10/5/2007	0131_SC1_SO_005_100507_01* 10/5/2007
Hydrocarbon Chain Identification						
T/R Hydrocarbons: C8-C10	mg/kg	ND<100	ND<10	ND<200	ND<50	ND<10
T/R Hydrocarbons: C10-C18	mg/kg	110	ND<10	270	ND<50	ND<10
T/R Hydrocarbons: C18-C28	mg/kg	710	290	11000	2300	ND<10
T/R Hydrocarbons: C28-C36	mg/kg	6000	130	12000	1800	ND<10
T/R Hydrocarbons: C36-C40	mg/kg	1900	27	4700	590	ND<10
T/R Hydrocarbons: C8-C40 Total	mg/kg	15000	450	29000	4600	ND<10
Gasoline Range Organics	mg/kg	1.6	ND<0.19	0.38	0.25	ND<0.19
Volatile Organic Compounds						
Benzene	ug/kg	ND<0.97	ND<0.97	ND<0.97	ND<0.97	ND<0.97
Ethylbenzene	ug/kg	24	ND<1.1	1.8	ND<1.1	ND<1.1
m,p-Xylene	ug/kg	75	ND<1.9	4.9	ND<1.9	ND<1.9
o-Xylene	ug/kg	42	ND<0.96	1.0	ND<0.96	ND<0.96
Toluene	ug/kg	ND<0.96	ND<0.96	ND<0.96	ND<0.96	ND<0.96
Polychlorinated Biphenyls						
Aroclor 1016	mg/kg	ND<0.0018	ND<0.0018	ND<0.0018	ND<0.0018	ND<0.0018
Aroclor 1221	mg/kg	ND<0.0044	ND<0.0044	ND<0.0044	ND<0.0044	ND<0.0044
Aroclor 1232	mg/kg	ND<0.0027	ND<0.0027	ND<0.0027	ND<0.0027	ND<0.0027
Aroclor 1242	mg/kg	ND<0.0020	ND<0.0020	ND<0.0020	ND<0.0020	ND<0.0020
Aroclor 1248	mg/kg	ND<0.0019	ND<0.0019	ND<0.0019	ND<0.0019	ND<0.0019
Aroclor 1254	mg/kg	ND<0.0027	ND<0.0027	ND<0.0027	ND<0.0027	ND<0.0027
Aroclor 1260	mg/kg	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016
Aroclor 1262	mg/kg	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012

* H&A state that the sample ID is mis-typed in the lab report and should read 121_SC1_SO_005_100507_01

Table 4
PCB Groundwater Analytical Results
2701 North Harbor Drive, San Diego CA

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	Parameter	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
	Unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	RBC	**1.1**			**0.14**	**0.13**	**0.078**	**0.013**
B131-MW1	1/7/2010	ND<0.0050	ND<0.010	ND<0.0050 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050
B131-MW2	1/6/2010	ND<0.0055 i	ND<0.018 i	ND<0.015 i	ND<0.0096 i	ND<0.0061 i	ND<0.0050 i	ND<0.0050 i
B131-MW2D	1/7/2010	ND<0.0050 i	ND<0.010i	ND<0.0077 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050	ND<0.0050
B131-MW3	1/6/2010	ND<0.034 i	ND<0.14 i	ND<0.076 i	ND<0.050 i	ND<0.034 i	ND<0.0063 i	ND<0.015 i
B131-MW3-B	1/6/2010	ND<0.011 i	ND<0.061 i	ND<0.022 i	ND<0.018 i	ND<0.015 i	ND<0.0065 i	ND<0.0050
B131-MW3D	1/6/2010	ND<0.0050 i	ND<0.020 i	ND<0.014 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050 i
B131-MW4	1/7/2010	ND<0.0050 i	ND<0.010 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050	ND<0.0050
B131-MW5	1/7/2010	ND<0.0050 i	ND<0.010 i	ND<0.0065 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050	ND<0.0050
B131-MW6	1/6/2010	ND<0.030 i	ND<0.094 i	ND<0.045 i	ND<0.056 i	ND<0.047 i	ND<0.014 i	ND<0.0093 i
B156-MW1	1/7/2010	ND<0.0050 i	ND<0.010 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050	ND<0.0050
AREA D-MW-2	1/6/2010	ND<0.025 i	ND<0.044 i	ND<0.046 i	ND<0.046 i	ND<0.029 i	ND<0.024 i	ND<0.011 i
AREA D-MW-1	1/6/2010	ND<0.056 i	ND<1.1 i	ND<0.15 i	ND<0.088 i	ND<0.049 i	ND<0.018 i	ND<0.014 i
P2	1/6/2010	ND<0.0083 i	ND<0.030 i	ND<0.015 i	ND<0.0095 i	ND<0.0085 i	ND<0.0050 i	ND<0.0050 i
GT4	1/5/2010	ND<0.0050 i	ND<0.028 i	ND<0.011 i	ND<0.0085 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050 i
B158-MW1	1/7/2010	ND<0.0084 i	ND<0.065 i	ND<0.015 i	ND<0.021 i	ND<0.0084 i	ND<0.0084	ND<0.0084
B158-MW2	1/7/2010	ND<0.0050 i	ND<0.019 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050	ND<0.0050
B120-MW1	1/5/2010	ND<0.0066 i	ND<0.022 i	ND<0.011 i	ND<0.014 i	ND<0.0085 i	ND<0.0050 i	ND<0.0050 i
B120-MW2	1/6/2010	ND<0.50	ND<1.0	ND<0.50	ND<0.50	**18 D**	ND<0.50	**0.89 D**
B120-MW2-B	1/6/2010	ND<0.50	ND<1.0	ND<0.50	ND<0.50	**11 D**	ND<0.50	**0.43 JD**
B120-MW3	1/6/2010	ND<0.0050 i	ND<0.015 i	ND<0.0061 i	ND<0.0075 i	ND<0.0068 i	ND<0.0062 i	ND<0.0050 i
B120-MW4	1/5/2010	ND<0.0050 i	ND<0.027 i	ND<0.0091 i	ND<0.0061 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050 i
B120-MW5	1/6/2010	ND<0.0050 i	ND<0.017 i	ND<0.0057 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050 i
B120-MW6	1/8/2010	ND<0.017 i	ND<0.11 i	ND<0.034 i	ND<0.029 i	ND<0.019 i	ND<0.021 i	ND<0.0050 i
B120-MW7	1/5/2010	ND<0.0050 i	ND<0.040 i	ND<0.012 i	ND<0.013 i	ND<0.011 i	ND<0.0050 i	ND<0.0050 i
B120-MW8	1/5/2010	ND<0.0054 i	ND<0.033 i	ND<0.012 i	ND<0.012 i	ND<0.0070 i	ND<0.0050 i	ND<0.0050 i
B120-MW9	1/5/2010	ND<0.0093 i	ND<0.025 i	ND<0.0099 i	ND<0.012 i	ND<0.012 i	ND<0.0052 i	ND<0.0050 i
FMY-MW1	1/7/2010	ND<0.0050 i	ND<0.010 i	ND<0.016 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050
B102-MW6	1/6/2010	ND<0.0057 i	ND<0.028 i	ND<0.012 i	ND<0.0066 i	ND<0.013 i	ND<0.0054 i	ND<0.0050 i
B102-MW4	1/7/2010	ND<0.0050	ND<0.010 i	ND<0.0058 i	ND<0.0050	ND<0.0050 i	ND<0.0050	ND<0.0050
B102-MW5	1/7/2010	ND<0.0050 i	ND<0.020 i	ND<0.0065 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050	ND<0.0050
B180-MW1	1/5/2010	ND<0.0050 i	ND<0.024 i	ND<0.0050 i	ND<0.0054 i	ND<0.0062 i	ND<0.0050 i	ND<0.0050
B180-MW2	1/7/2010	ND<0.0050 i	ND<0.010 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050	ND<0.0050
B180-MW2B	1/7/2010	ND<0.0050 i	ND<0.010 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050 i	ND<0.0050	ND<0.0050

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FIGURES

Legend

- Sediment Sample (TDY 1/18/07 except as noted)
- Sediment Sample (H&A 8/10/07)
- Sock Sediment Sample (TDY 12/21/07 except as noted)
- Exterior Soil Sample (TDY 11/28/07-11/29/07)
- Catch Basin
- Storm Drain

(1) Sample collected from base of storm drain, below tributary T4 on 12/21/07
(2) Sample collected on 8/13/07
(3) Sample collected from filter sock on 02/01/07
(4) Sample collected from filter sock on 02/06/08
(5) Sample collected from filter sock on 04/11/08

SEDIMENT, SOIL, AND FILTER SOCK SAMPLING RESULTS - 60-INCH SWCS
2701 NORTH HARBOR DRIVE SAN DIEGO, CALIFORNIA

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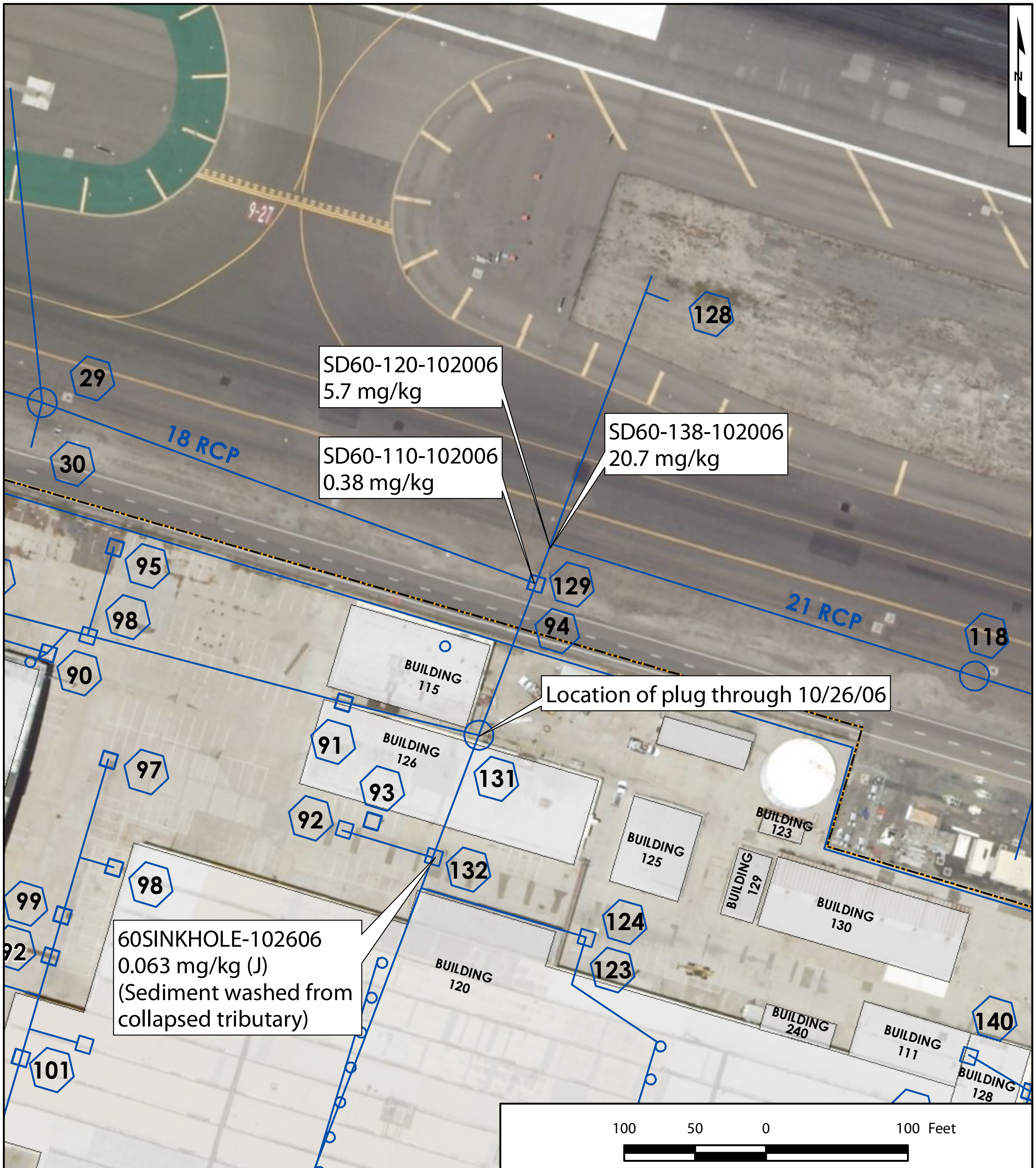
Figure 1

SC0307

March 2008



Legend

- Storm Drain Line
- Manhole
- 94 Catch Basin
- Property Boundary

Image: Microsoft Virtual Earth

20-Inch Tributary
Sediment Sample Event 10-20-06

2701 North Harbor Drive
San Diego, California

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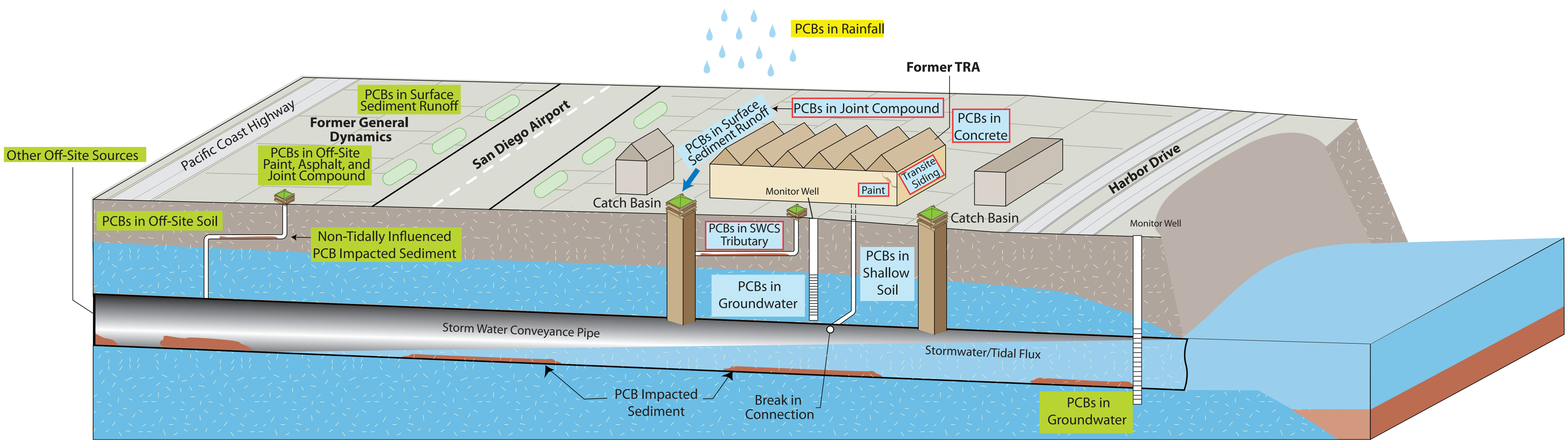
San Diego | January 2009

Figure 2

X:\GIS\tdy\post-storm sed samplingUpdated1-19-09-JL.mxd



Legend

- Site Related PCB Source
- Non Site Related PCB Source
- Potential Ambient PCB Source
- Source to be Removed During Demolition

Conceptual Site Model

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San Diego	June 2010	Figure 3