

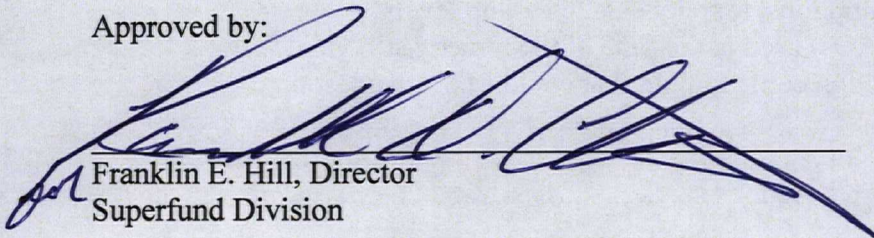
**Second Five-Year Review Report
FCX, Inc. - Washington Plant Site
Washington, Beaufort County, North Carolina
US EPA ID: NCD 981475932**



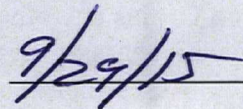
Prepared for
United States Environmental Protection Agency
Region 4
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Prepared by the
State of North Carolina
Department of Environment & Natural Resources

Approved by:


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Date:





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LIST OF ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
BFPP	Bona Fide Prospective Purchaser
BRA	Baseline Risk Assessment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of Concern
CRQL	Contract Required Quantitation Limit
FS	Feasibility Study
FWS	US Fish and Wildlife Service
FYR	Five-Year Review
HI	Hazard Index
IC	Institutional Control
MCL	Maximum Contaminant Level
MRL	Minimum Reporting Limit
MNA	Monitored Natural Attenuation
mg/kg	Milligram per kilogram
MW	Monitoring Well
NC 2L	North Carolina Classifications and Water Quality Standards, Subchapter 2L
NCAC	North Carolina Administrative Code
NC DENR	North Carolina Department of Environment and Natural Resources
NC DHR	North Carolina Department of Human Resources
NC DOT	North Carolina Department of Transportation
NCP	National Contingency Plan
NOAA	National Oceanic and Atmospheric Association
NPL	National Priorities List

O&M	Operation and Maintenance
OU	Operable Unit
PCOR	Preliminary Close-Out Report
RAO	Remedial Action Objective
RD	Remedial Design
RG	Remediation Goal
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
SESD	Science and Ecosystem Support Division
SVOC	Semi-Volatile Organic Compound
TBC	To Be Considered
µg/L	Microgram per Liter or ppb
EPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

Beginning in 1945, FCX operated at the FCX Washington Plant site (Site) as a farm supply distribution center that repackaged and sold pesticides, herbicides and tobacco-treating chemicals. The Site is located in the northwest portion of Washington, North Carolina, in west central Beaufort County.

FCX operated between 1945 and 1985, during which time their pesticide and insecticide handling and disposal practices resulted in soil and groundwater contamination. An onsite landfill located in Source Area 5 was also used at the Site from 1960 to 1981. During this time, an unknown amount of chemical waste contained in plastic containers and paper bags was disposed of in the onsite landfill. In the early 1970s, pesticide trenches, which measured approximately 12 feet by 20 feet and 10 to 12 feet deep, were used at the Site and filled with waste pesticides and other agricultural chemicals.

On August 26, 1986, the State of North Carolina inspected the Site and sampling revealed the presence of aldrin, dieldrin, chlordane, 4,4-DDT, 4,4-DDE, 4,4-DDD, hexachlorobenzene, carbon disulfide, naphthalene, phenanthrene, acenaphthylene, fluorene, dibenzofuran, 2-methylnaphthalene and mercury at measurable concentrations. Soil samples collected in the vicinity of the main chemical burial trench detected the presence of toxaphene at a concentration of 2,400 milligrams/kilogram (mg/kg) and copper at a concentration of 480 mg/kg, along with other contaminants. In August 1988, the United States Environmental Protection Agency (EPA) conducted a sampling investigation to identify the boundaries of the chemical burial trenches. Soil samples collected during the sampling investigation identified the presence of elevated concentrations of 4,4-DDD, 4,4-DDE, 4,4-DDT, alpha-chlordane, gamma-chlordane, dieldrin, phenol, heptachlor and methoxychlor near the main chemical burial trench.

From 1990 to 1996, the EPA conducted a time-critical removal action to address remaining source contamination. In May 1996, the removal action was completed. Over the four stages of soil excavation, approximately 16,000 cubic yards of the excavated soil was treated via thermal desorption and disposed of offsite.

The remedies at the Site are addressed as two operable units (OUs). The 1993 Record of Decision (ROD), which selected the remedy to address groundwater contamination at OU1, was signed on September 12, 1993. This remedy included extraction of groundwater, onsite treatment via air stripping, carbon adsorption, precipitation and ion exchange and discharge treated water to surface water. The 1996 ROD, which selected the remedy to address soil contamination at OU2, was signed on December 18, 1996. The 1996 ROD selected “no further action” as the remedy for OU2. This status was given due to the previous removal actions at the Site and a risk assessment, which indicated that the risk associated with exposure at the Site, was within the accepted risk range determined to be protective of human health and the environment under a commercial/industrial land use scenario. The 1996 ROD also required an ecological assessment as part of the Five-Year Review (FYR) for OU2. In 2005, a ROD Amendment was issued. This amendment changed the remedial action to Monitored Natural Attenuation (MNA) and replace the statutory requirement for the Site to a policy FYR. The amendment also eliminated the requirement for a FYR for OU2. This is the second Five-Year Review for the FCX Washington Plant Site. The triggering action for this review is the signing date of the previous FYR report, September 15, 2010.

The remedy at the FCX Washington Plant Site currently protects human health and the environment in the short-term because there are no known current exposure routes to contaminated soil or groundwater. Furthermore, the contaminated soil has been mitigated through source removal and groundwater is not used as a potable source of water. In order for the remedy to be protective in the long-term, the following actions are required: evaluate groundwater conditions to determine the impact of the highway bypass on groundwater flow and the MNA remedy; reevaluate the groundwater remediation goals to determine if modifications are needed; implement institutional controls until remedial goals are attained; and modify the decision document to include institutional controls for soils.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: FCX, Inc – Washington Plant Site		
EPA ID: NCD 981475932		
Region: 4	State: NC	City/County: Washington, Beaufort County
SITE STATUS		
NPL Status: Final		
Multiple OUs? Yes	Has the site achieved construction completion? 09 / 22 / 2005	
REVIEW STATUS		
Lead agency: EPA		
Author name (Federal or State Project Manager): Nile Testerman / Stephanie Grubbs		
Author affiliation: NC DENR		
Review period: 12 / 1 / 2014 – 9 / 15 / 2015		
Date of site inspection: 09 / 23 / 2014		
Type of review: Policy		
Review number: 2 (Second)		
Triggering action date: 9 / 15 / 2010		
Due date (five years after triggering action date): 9 / 15 / 2015		

Issues/Recommendations				
OU(s) without Issues/Recommendations Identified in the Five-Year Review:				
None				
Issues and Recommendations Identified in the Five-Year Review:				
OU(s): OU1	Issue Category: Monitoring			
	Issue: The wells removed/destroyed during the construction of the highway bypass may need to be reinstalled and sampled to determine the impact of the bypass on groundwater flow and the MNA remedy.			
	Recommendation: Evaluate groundwater conditions to determine the impact of the highway bypass on groundwater flow and the MNA remedy.			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	Yes	EPA/State/Property Owners/NCDOT	EPA	09/15/2017
OU(s): OU1	Issue Category: Remedy Performance			
	Issue: In 2013, the North Carolina Groundwater Standards were amended. Subsequently, the current North Carolina Groundwater Standards for several compounds are more stringent than the 1993 ROD.			
	Recommendation Reevaluate the groundwater remediation goals to determine if modifications are needed.			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	Yes	EPA/State	EPA	09/15/2017
OU(s): OU1 OU2	Issue Category: Institutional Controls			
	Issue: Institutional Controls have not been implemented.			
	Recommendation: Implement land use restrictions or other appropriate institutional controls at the Site.			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	Yes	EPA	EPA/State	09/15/2017

OU(s): OU1	Issue Category: Institutional Controls			
	Issue: The OU2 remedy does not require institutional controls for soil.			
	Recommendation: Modify the remedy to include institutional controls for soil.			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	Yes	EPA	EPA/State	09/15/2017

Sitewide Protectiveness Statement

Protectiveness Determination:
Short-Term Protective

Addendum Due Date:
Not Applicable

Protectiveness Statement:
 The remedy at the FCX Washington Plant Site currently protects human health and the environment in the short-term because there are no known current exposure routes to contaminated soil or groundwater. Furthermore, the contaminated soil has been mitigated through source removal and groundwater is not used as a potable source of water. In order for the remedy to be protective in the long-term, the following actions are required: evaluate groundwater conditions to determine the impact of the highway bypass on groundwater flow and the MNA remedy; reevaluate the groundwater remediation goals to determine if modifications are needed; implement institutional controls until remedial goals are attained; and modify the decision document to include institutional controls for soils.

Environmental Indicators

- Current human exposures at the Site are under control.

Are Necessary Institutional Controls in Place?

All Some None

Has EPA Designated the Site as Sitewide Ready for Anticipated Use?

Yes No

Has the Site Been Put into Reuse?

Yes No

1.0 Introduction

The purpose of conducting a FYR is to determine whether the remedy implemented at a site is protective of human health and the environment. The methods, findings, and conclusions of this review are documented in the FYR report. In addition, FYR reports identify issues found during the review, if any, and identify recommendations to address them.

The EPA prepares FYRs pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Section 121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA Section 121 states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

The EPA interpreted this requirement further in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP); Title 40 Code of Federal Regulations (CFR) §300.430(f)(4)(ii) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

The North Carolina Department of Environment and Natural Resources (NC DENR), Division of Waste Management, Superfund Section, on behalf of the EPA, has conducted a FYR of the fund-financed cleanup implemented at the FCX, Inc. – Washington Plant Site (FCX or Site) (EPA ID# NCD 981475932). The review was conducted from December 2014 through September 2015, and the methods, findings, conclusions, and significant issues found during the review are documented in this FYR report. This FYR was performed in a manner consistent with the latest EPA Comprehensive FYR Guidance (US EPA, 2001).

The Site consists of two OUs. The remedial action provides remediation of OU1, contaminated groundwater through MNA and remediation of OU2, contaminated soil through no further action. This FYR Report addresses the entire Site. The triggering action for this policy review is the signing date of the first FYR Report, September 15, 2010. The next FYR for the FCX Site will be due within five years of the signature/approval date of this FYR.

2.0 Site Chronology

Table 1: Site Chronology

Event	Date
Initial discovery of the Site	June 11, 1986
Preliminary assessment completed	September 17, 1986
Site inspection completed	June 17, 1987
EPA proposed the Site for inclusion on the National Priorities List (NPL)	June 24, 1988
Site finalized on the NPL	March 31, 1989
Time-critical removal action, first phase completed	January 1990
Consent decree signed	October 19, 1990
Time-critical removal action, second phase completed	January 1992
Consent decree with Fred Webb, Inc.	March 30, 1992
Time-critical removal action, third phase completed	September 1992
Removal assessment	December 31, 1992
Ecological Risk Assessment and Risk/Health assessment	April 15, 1993
Remedial Investigation and Feasibility Study (RI/FS) completed for OU1	September 15, 1993
Record of Decision (ROD) signed for OU1	September 15, 1993
Remedial Design begins	February 23, 1994
Time-critical removal action, fourth phase completed	May 1996
Combined RI/FS completed for OU2	December 18, 1996
ROD signed for OU2	December 18, 1996
Remedial Design completed	September 8, 2005
ROD Amendment signed for OU1 and OU2	September 8, 2005
OU1 remedial action begins	September 8, 2005
Remedial Action construction complete	September 22, 2005
Superfund Preliminary Close-Out Report (PCOR) complete	September 22, 2005
Interim Remedial Action report completed	February 23, 2009
First FYR completed	September 15, 2010
Ecological Risk Assessment completed.	April 24, 2012
Park Boats request for the Site status and has interest in purchasing a portion of the property.	May 20, 2013
EPA completes a Soil Review of FCX Soil Samples.	September 11, 2013
EPA SESD Sampling Investigation Report completed.	August 18, 2014

3.0 Background

3.1 Site Description

Beginning in 1945, FCX operated at the Site as a farm supply distribution center that repackaged and sold pesticides, herbicides and tobacco-treating chemicals. The Site is located in the northwest portion of Washington, North Carolina, in west central Beaufort County. The Site covers approximately 12 acres and is bounded on the northeast by the intersection of Grimes Road and Whispering Pines Road (Figure

1). Wetlands leading to Kennedy Creek and Tar River are located to the south and southwest of the Site and agricultural land is located to the west and northwest of the Site.

In the 1993 ROD, the Site was divided into five source areas (Source Areas 1 through 5). Source Area 1 included parcels 15018945, 15019372 and 15021598, which housed several small office/storage buildings and silos/tanks associated with prior operations of a fertilizer and hardware company. A man-made drainage ditch bordered Source Area 1 to the northeast. Parcel 15021595, which is included in a portion of Source Area 2, had on its premises a large warehouse building and a gravel parking lot associated with a neighboring restaurant (the former FCX blending building). Source Area 3 included parcels 15016903, 01028589 and a small portion of parcel 01031971. Figure 3 is a parcel map of the Site. A large warehouse building depression and drainage ditches used to divert surface water runoff towards a drainage ditch located parallel to Grimes Road were located on Source Area 3. Source Area 3 also contained a former loading dock (concrete ramp) and several concrete grain silo support pads located south of and adjacent to the large warehouse building.

The former FCX warehouse is located on Source Area 4, which includes the majority of parcel 01031971. Source Area 5 is comprised of the remainder of parcel 01031971 and the southern portion of parcel 02011241. Source Area 5 was a major chemical burial trench at FCX that was excavated and backfilled, and fenced contaminated pesticide waste stockpiles were stored in this area. On the southwest corner of the fenced stockpile area, a small concrete block retaining wall and gravel pad are present where aboveground storage tanks once existed. Because the former FCX warehouse is being reused, the EPA completed a vapor intrusion evaluation in February 2010. The vapor intrusion evaluation found no risk of vapor intrusion because no site-related volatile organic compounds (VOCs) were found in the Site's shallow aquifer.

In March 2010, the North Carolina Department of Transportation (NCDOT) completed the construction of U.S. 17 Washington Bypass that extends from the southwest boundary to the northeast boundary of the Site (Figure 2). The 15.5-mile improvement of the US-17 corridor included four parcels of land on the FCX-Washington Site. Construction of the highway bypass destroyed wells MW03A, MW03B, MW13B, and MW14B.

In 2013, parcel 01031971 was transferred to Park Boat Company to be used as a storage area for boats and trailers. A loading ramp was constructed at the large bay door on the southwest side of the building to allow boats to be stored in the warehouse. Soil was removed near the bay door for the construction of the ramp and piled at the edge of the gravel parking area closest to well MW11A.

3.2 Site Topography, Geology, and Hydrogeology

A portion of the Site is currently in commercial reuse, and the northern and western portions of the Site are being reused for public use as a highway bypass. The remainder of the Site is not currently in reuse. The Site is located in an area that includes industrial, commercial, residential, and agricultural land uses. The former FCX warehouse is currently being used by Park Boat Company to store boats. Additionally, areas nearby the Site include agricultural fields to the southeast, as well as fields north and east of the

Site, which are separated by major highways. A 275-acre freshwater wetland area is located further to the south and southwest of the Site. The new highway bypass, completed in 2010, also extends through this area. Following the completion of the bypass, there have been no further anticipated changes in land use at the Site, or in the areas surrounding the Site.

The Site overlies seven aquifers, including a surficial aquifer and six deeper semi-confined or confined aquifers. The aquifer system is as follows, in order of increasing depth: surficial aquifer, Yorktown aquifer, Castle Hayne aquifer, Beaufort aquifer, Peedee aquifer, Black Creek aquifer and Cape Fear aquifer.

3.3 Land and Resource Use

Mostly commercial and industrial land uses interspersed with residential neighborhoods are within a three-mile radius of the Site; the Site's immediate surroundings are a mix of commercial and agricultural land uses. Beaufort County parcel identification numbers for Site properties are 01031971, 02011241, 15016903, 01028589, 15021595, 15021598, 15019372, and 15018945. FCX, Inc. previously owned buildings on parcels 15021595, 15016903, 01028589 and 01031971 (Figure 3). NCDOT owns parcel 15021595 along with a portion of the middle section of parcel 02011241, which is the location of the 2010 bypass.

The Castle Hayne aquifer, which is located about 30 feet below the land surface at the Site, is the major source of drinking water in the area. The local population near the Site originally relied on public supply wells or private wells for potable water. Industrial production wells were also used in the vicinity of the Site. The City of Washington continues to treat groundwater from the Castle Hayne aquifer prior to providing water to the community of Washington. Groundwater flow at the Site is southwest. No untreated groundwater is currently being used as a drinking water source onsite or offsite.

3.4 History of Contamination

The Site operated between 1945 and 1985. In 1985, FCX filed for bankruptcy and ceased operations. FCX's pesticide and insecticide handling and disposal practices resulted in soil and groundwater contamination. An onsite landfill located in Source Area 5 was also used at the Site from 1960 to 1981. During this time, an unknown amount of chemical waste contained in plastic containers and paper bags was disposed of in the onsite landfill. In the early 1970s, a pesticide trench that measured approximately 12 feet by 20 feet and 10 to 12 feet deep was used at the Site. The pesticide trench was filled with waste pesticides and other agricultural chemicals.

Beginning in mid-1986, federal, state and local agencies conducted several Site investigations. In July 1986, a preliminary assessment of the Site was prepared by the North Carolina Department of Human Resources (NCDHR, now North Carolina Department of Environment and Natural Resources, NCDENR) that indicated that buried onsite pesticides, in the form of toxic powder and liquid wastes, could potentially contaminate area groundwater. As a result, NCDHR inspected the Site on August 26, 1986. Chemical analyses revealed the presence of aldrin, dieldrin, chlordane, 4,4-DDT, 4,4-DDE, 4,4-

DDD, hexachlorobenzene, carbon disulfide, naphthalene, phenanthrene, acenaphthylene, fluorene, dibenzofuran, 2-methylnaphthalene and mercury at measurable concentrations. No VOCs, semi-volatile organic compounds (SVOCs), pesticide or metal contamination was detected in any of the five groundwater samples collected. Ambient air monitoring during the Site inspection did not detect VOCs above background levels.

In May 1987, FCX initiated an investigation of onsite contamination and cleared the chemical warehouse located in Source Area 4. Soil samples collected in the vicinity of the main chemical burial trench detected the presence of toxaphene at a concentration of 2,400 mg/kg and copper at a concentration of 480 mg/kg, along with other contaminants.

In August 1988, the EPA conducted a sampling investigation to identify the boundaries of the chemical burial trenches located in Source Area 5. Soil samples collected during the sampling investigation identified the presence of elevated concentrations of 4,4-DDD, 4,4-DDE, 4,4-DDT, alpha-chlordane, gamma-chlordane, dieldrin, phenol, heptachlor and methoxychlor near the main chemical burial trench.

3.5 Initial Response

In October and November 1988, the EPA and the State of North Carolina joined in legal action to secure the remaining assets of FCX, which had filed for bankruptcy, prior to their disbursement to the company's investors. A July 14, 1992, trust agreement provided that FCX could not abandon the property at the Site and that a portion of the company's remaining assets would be divided between the Site and the FCX- Statesville Site. Additionally, in March 1992, the EPA entered into a consent decree with Fred Webb, Inc., the Site owner, to recover costs associated with past, present, and future responses to address the release of hazardous substances at the Site.

In September 1990, the EPA initiated the Site's remedial investigation/feasibility study (RI/FS) to address all potential source areas and associated contamination. The EPA excavated contaminated soil from the source areas at the Site between 1989 and 1990. Approximately 3,000 cubic yards of contaminated soil from the main chemical burial trench in Source Area 5, and 49 cubic yards from the area surrounding the former FCX blending building at Source Area 2 were excavated, consolidated and stockpiled by the EPA. In July 1990, in response to a report that the cover on the stockpiled soil was torn; the EPA constructed a temporary containment berm around the stockpiled soil and repaired the torn liner. During this response, additional buried soil and material two feet below ground surface (with a total pesticides concentration of 103 mg/kg) was identified at the northern corner of the stockpile. Following the initial soil excavations, the EPA conducted groundwater analyses and found elevated concentrations of pesticides, VOCs, SVOCs and metals primarily in Source Areas 4 and 5. A groundwater sampling investigation in the vicinity of the former warehouse and chemical burial trench detected elevated concentrations of endrin and 4,4-DDD.

The EPA conducted a time-critical removal action to address remaining source contamination. Three stages of the removal action were completed between 1990 and 1992. In January 1990, approximately 2,200 cubic yards of pesticide contaminated soil and debris were excavated and stockpiled. In January

1992, an additional 2,000 cubic yards of pesticide contaminated soil and debris were excavated and added to the existing stockpile. The third stage of the removal action was completed in September 1992, when approximately 3,000 cubic yards of the existing stockpile was bagged and placed in the onsite warehouse for storage, and an additional 11,600 cubic yards was excavated and stockpiled onsite. The fourth stage of the time-critical removal action took approximately one and a half years and was completed in May 1996 when approximately 15,000 cubic yards of the excavated soil was treated via thermal desorption and disposed of offsite.

3.6 Basis for Taking Action

A 1993 baseline risk assessment (BRA) used sampling data collected during the RI to identify contaminants of concern (COCs), complete a toxicity assessment, a human exposure assessment, a risk characterization and an environmental assessment. The BRA for groundwater determined that current and future exposure pathways at the Site were through ingestion of contaminated groundwater and inhalation of VOCs evolved from groundwater during household use.

The 1996 BRA for soil determined that current and future exposure scenarios to soil were through ingestion and dermal contact with contaminated soil, sediments, and inhalation of fugitive dust. The BRA determined that the carcinogenic risks associated with exposure to soil contamination during future land use scenarios were within the EPA's acceptable risk range of 1×10^{-4} to 1×10^{-6} . The non-carcinogenic risks associated with exposure to soil contamination during future land use scenarios were also within the EPA's acceptable risk, which is a hazard index (HI) equal to or less than 1. No COCs were established for soil because source contamination was excavated from the Site during the removal actions.

4.0 Remedial Actions

In accordance with CERCLA and the NCP, the overriding goals for any remedial action are protection of human health and the environment and compliance with applicable or relevant and appropriate requirements (ARARs). A number of remedial alternatives were considered for the Site, and final selection was made based on an evaluation of each alternative against nine evaluation criteria that are specified in Section 300.430(e)(9)(iii) of the NCP. The nine criteria are:

1. Overall Protection of Human Health and the Environment
2. Compliance with ARARs
3. Long-Term Effectiveness and Permanence
4. Reduction of Toxicity, Mobility or Volume through Treatment
5. Short-Term Effectiveness
6. Implementability
7. Cost
8. State Acceptance
9. Community Acceptance

4.1 Remedy Selection

The remedies at the Site are addressed as two OUs. The 1993 ROD, which selected the remedy to address groundwater contamination at OU1 was signed on September 15, 1993. The 1996 ROD, which selected the remedy to address soil contamination at OU2 was signed on December 18, 1996. In 2005, a ROD Amendment was issued to change the original remedies.

4.1.1 1993 ROD

The ROD issued September 15, 1993, provided for remediation of contaminated groundwater and contaminated soil. The remedy selected in the Site's 1993 ROD addressed the principle threat of contaminated groundwater emanating beneath the Site. The major components of the selected remedy for OU1 included:

- Extraction of groundwater contaminated above Maximum Contaminant Level (MCLs) or the North Carolina Groundwater Standards (NC 2L), whichever is more protective.
- Onsite treatment of extracted groundwater via air stripping, carbon adsorption, precipitation and ion exchange.
- Discharge of treated groundwater to surface water.

The Remedial Action Objectives (RAOs) as stated in the 1993 ROD include:

- Prevent migration of contaminants to surface water that would result in contamination to levels greater than the Ambient Water Quality Criteria.
- Control future releases of contaminants to ensure protection of human health and the environment.
- Permanently and significantly reduce mobility, toxicity or volume of characteristic hazardous waste with treatment.

Table 2 lists the groundwater remediation goals as specified in the 1993 ROD.

Table 2: Groundwater Remediation Goals as Specified in the 1993 ROD

Contaminant	Remediation Goal (µg/L)
Pesticides	
Aldrin	0.01 ^{a,b}
Heptachlor	0.076 ^c
Heptachlor epoxide	0.038 ^c
Alpha-BHC	0.014 ^d
Beta-BHC	0.047 ^d
Gamma-BHC (lindane)	0.0265 ^c
Dieldren	0.02 ^a
4,4-DDT	0.02 ^a
4,4-DDE	0.02 ^a
4,4-DDD	0.02 ^a
Endrin	0.20 ^a
Toxaphene	1.0 ^{a,c}
Chlordane	0.027 ^c
VOCs	
Chlorform	0.19 ^c
1,2-Dichloroethane	0.38 ^c
1,2-Dichloropropane	0.56 ^c
Benzene	1 ^c
Toluene	1,000 ^f
Chlorobenzene	100 ^f
Total Xylenes	400 ^c
SVOCs	
Bis(2-ethylhexyl)phthalate	4 ^f
Pentachlorophenol	1 ^c
Carazole	4.3 ^d
Inorganics	
Beryllium	1 ^f
Chromium	50 ^c
Nickel	100 ^f
Lead	15 ^g
Mercury	1.10 ^c
Manganese	697 ^h
<p>a) The 1993 ARAR was based on the contract required quantitation limit (CRQL). b) According to the Site's 1993 ROD, the CRQL exceeded the risk-based concentration for aldrin. c) The 1993 ARAR was based on the NC Groundwater Quality Standard (15 North Carolina Administrative Code (NCAC) 021 or NC 2L). d) The 1993 ARAR was based on the cancer slope factor value applied to a residential land use scenario at the Site. e) According to the Site's 1993 ROD. The CRQL exceeded the NC 2L f) The 1993 ARAR was based on the federal MCL. g) The 1993 ARAR for lead was based on the treatment technique action level. h) The 1993 ARAR was based on the average background concentration at the Site, which was greater than the NC 2L of 50. µg/L = microgram per liter.</p>	

4.1.2 1996 ROD

Due to the soil removal actions, the human health risk assessment results indicated the risk associated with exposure to soil at the Site was within the accepted risk range determined to be protective of human health under a commercial/industrial land use scenario. At that time, the ecological assessment concluded the chemicals present in soils, sediments, and surface waters have the potential to negatively impact terrestrial and aquatic organisms, but both benthic communities appeared to be healthy in terms of diversity. Therefore, the 1996 ROD selected “No further Action” for the onsite soils. However, the 1996 ROD required an ecological risk assessment as part of the five-year review.

4.1.3 2005 ROD Amendment

In 2005, a ROD Amendment changed the selected remedies for OU1 and OU2. The major changes to the remedial components for OU1 included:

- Replacing active extraction and treatment with MNA as the remedy for the Site’s groundwater.
- Replacing the reference to the statutory requirement for the Site’s FYR to a requirement for a policy FYR.

The major change to the remedial component for OU2 was:

- Modifying the 1996 OU2 ROD to eliminate the requirement for a FYR.

4.2 Remedy Implementation

OU1

The remedial design (RD) for OU1 was initiated in 1997. By 1998, review of the pre-design groundwater sampling data resulted in the EPA's evaluation of MNA as an alternate approach to address the Site's groundwater contamination (instead of the extraction and treatment system selected in the Site's 1993 ROD). Prior removal actions had removed enough of the source contamination that MNA was a feasible option for addressing the remaining groundwater contamination. By August 2003, a work plan for MNA was completed which included natural attenuation parameters and pesticide daughter products that would be monitored to evaluate the trend in reduction of pesticides and VOCs in groundwater. The work plan also required defining the pesticide and VOC groundwater plumes, and the impact of the plume on downgradient receptors, by installing new monitoring wells and collecting surface water, sediment and push-point samples from the wetlands downgradient from the Site.

The EPA used two lines of evidence to evaluate the occurrence of MNA at the Site: a trend of decreasing concentrations, and process-specific data. A field investigation, including surface water, sediment, subsurface soil, and groundwater samples, was completed in October 2004. Groundwater analysis of samples collected in October 2004 included constituents considered to be daughter products of pesticide COCs at the Site. A comparison of the 2004 results with groundwater sampling efforts in

1993, 1998, and 2002, showed a decreasing trend in COC concentrations in most of the existing wells. COCs were not detected in newly installed deep aquifer monitoring wells. In 2005, the EPA selected MNA as the remedy to address remaining groundwater contamination at OU1.

Since 2005, groundwater sampling was conducted at the Site in January/August 2007 and January 2008. Construction of the NCDOT highway bypass began in 2007, which disrupted the groundwater monitoring sampling schedule. Monitoring wells MW3A, MW38, MW13B, and MW14B, from the MNA monitoring network, have been decommissioned as a result of the bypass construction. NCDOT completed the construction of the highway bypass in March 2010. Sampling resumed at the Site in March 2012, and has been sampled quarterly (with the exception of the second quarter in 2012) until the most recent sampling event in April 2014.

OU2

The remedy selected for OU2 required no further action to treat the soil because all of the soil and source contamination were removed during a time-critical removal action that was completed in a three-stage process between 1990 and 1992. In 1996, the contaminated soil excavated during the time-critical removal action was treated using thermal desorption, which completed the removal response.

4.3 System Operation/Operation and Maintenance

Operation and Maintenance (O&M)

The total cost for the remedy described in the Site's 2005 ROD Amendment was estimated at \$225,000. No capital cost is associated with conducting this work, and the cost for O&M of the MNA remedy is estimated to comprise the entire cost for the remedy. The cost estimate was based on the expectation of sampling fifteen wells on an annual basis for thirty years; however, no current O&M cost information is available.

5.0 Progress Since Last Five-Year Review

This is the Second FYR. The Protectiveness Statements for the First FYR in 2010 indicated the Site was protective of human health and the environment. The protectiveness statement in the 2010 report stated:

The Site's OUI remedy currently protects human health and the environment in the short-term because groundwater is not being used as a groundwater source onsite or offsite; removal actions were completed to excavate source contamination; and additional contaminated soil is being contained beneath a one-foot soil cover located on the northwest portion of the 2.07-acre portion of Tract 2 as recorded on the Beaufort County map record, Plat Cabinet D, Slide 94, of FCX, Inc. In order for the OU 1 remedy to be protective in the long-term, the following actions need to be taken: evaluate the effectiveness of MNA for groundwater contamination, given that physical site conditions have changed; regularly sample groundwater to determine if MNA is occurring; ensure NCDOT replaces groundwater monitoring wells abandoned during the construction of the highway bypass; and implement institutional controls to restrict groundwater use.

The Site's OU2 remedy currently protects human health and the environment in the short-term because most of the contaminated soil has been excavated, and there is no exposure pathway for the contaminated soil that remains at the Site. In order for the remedy to be protective in the long-term, the following actions need to be taken: conduct the ecological evaluation as required by the 1996 OU2 ROD and recommended in the May 2005 memorandum from EPA Region 4's Technical Services Section; reinstate the requirement for FYRs for OU2; update decision documents to require land use restrictions for the property located at the end of Grimes Road; and require appropriate measures be taken to address any soil contamination that may remain under the foundation of the former FCX warehouse, in the event that the warehouse is removed from the Site.

Because the remedial actions at both OUs are protective in the short-term, the Site's remedy is protective of human health and the environment. In order for the Site's remedy to be protective in the long-term, the following actions need to be taken: address issues with MNA program; implement institutional controls to prevent groundwater use; update decision documents to require land use restrictions for the property located at the end of Grimes Road; reevaluate the remediation goals for COCs that have become more stringent to ensure the remediation goals set in the 1993 ROD still fall within EPA's acceptable risk range for the Site; conduct the ecological evaluation that was required by the 1996 ROD and recommended in the May 2005 memorandum from EPA Region 4's Technical Services Section; and reinstate the requirement for FYRs for OU2. EPA should also determine whether land use restrictions are needed to mitigate any risks that may occur. Land use restrictions may be necessary if future uses at the Site include the removal of existing structures that would create an exposure pathway to contaminated soil that may be present under the former FCX warehouse on the Site.

Table 3 includes a summary of progress on recommendations from the First FYR in 2010.

Table 3: Progress on Recommendations from 2010 First FYR

Recommendation	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action (if applicable)
Reinstitute groundwater sampling to document whether MNA is performing as expected at the Site.	EPA	9/30/2011	Groundwater sampling started.	3/28/2012
Evaluate the need for temporary monitoring wells near the new bypass to monitor MNA at the Site until replacement-monitoring wells can be installed by NCDOT.	NCDOT	9/30/2011	In 2011, the NCDOT, the State, and the EPA discussed the need for more wells. Currently, the permanent well locations need to be discussed/re-evaluated and, if needed, the wells need to be installed.	-
Evaluate whether the MNA program should be	EPA	9/30/2011	Not completed	-

Recommendation	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action (if applicable)
updated based on new physical conditions at the Site.				
Implement institutional controls (ICs) to prevent groundwater use at the Site.	EPA	9/30/2015	Not completed	-
Reevaluate remediation goals that have become more stringent to ensure that they still fall within EPA's acceptable risk range for the Site.	EPA	6/30/2011	Not completed for groundwater. Completed for soil - The soil residential and industrial levels are below or within the EPA risks targets.	Groundwater: - Soil: 9/11/2013
Evaluate whether institutional controls are needed if the warehouse is removed and contaminated soil is exposed. Implement institutional controls, if needed.	EPA	9/30/2015	In 2013, the EPA, the State, and the property owner discussed ICs. ICs will be required as groundwater contamination exists on the Site regardless of soil contamination that may exist under the warehouse. ICs not implemented to date.	9/11/13
Update decision documents to require land use restrictions for the property located at the end of Grimes Road. Implement institutional controls, if needed.	EPA	12/31/2015	Not completed NCDOT, the State, and the EPA discussed if ICs are needed.	Ongoing
Perform the ecological risk assessment that was required by the 1996 ROD for OU2, and recommended by the 2005 memorandum from EPA Region 4's Technical Services Section.	EPA	6/30/2011	Completed. In 2012 the draft ecological risk assessment report was sent to National Oceanic and Atmospheric Administration (NOAA), US Fish and Wildlife Service (FWS), and the NCDENR. At this time, NOAA has been unable to complete the review; the FWS and NCDENR both reviewed the document and had no comments. Therefore, the report fulfills the obligation of conducting an ecological risk assessment for the Site.	4/24/2012
Re-evaluate the human health risk assessment to determine if soil at the Site poses an unacceptable risk for a residential land use scenario. Conduct FYRs for OU2 if necessary.	EPA	4/1/2015	Completed. The soil residential and industrial levels are below or within the EPA risks targets.	9/11/2013

In 2013, Park Boat Company contacted the EPA to inquire about purchasing a portion of the Site, identified as Source Areas 4 and 5 (located at the intersection of Grimes and Whispering Pines Road). Park Boat Company intends to use the warehouse for boat storage and sublet a portion of the property for other storage purposes. As a Bona Fide Prospective Purchaser (BFPP), Park Boats is required to: provide access to the EPA for sampling/inspection activities; limit the use of the property to commercial or industrial; prohibit installation of new or private groundwater wells; maintain the integrity of the existing concrete foundation slab in the warehouse building; implement all required ICs in the form of land use restrictions; notify the EPA prior to digging/disturbing or modifying structures/parking lots in the areas containing groundwater wells or contaminated soil; and call the EPA Emergency Response report any discoveries or release of hazardous substances. The EPA is planning to issue an Explanation of Significant Differences to include ICs as part of the remedy for soils. ICs for soils are necessary to prevent future disturbance of the ground cover at the end of Grimes Road, and possibly elsewhere at the Site. The EPA is currently having its contractor retrieve deeds.

6.0 Five-Year Review Process

6.1 Administrative Components

The NC DENR Superfund Section conducted the FYR for the FCX Site on behalf of the EPA. Nile Testerman (Environmental Engineer, NC DENR) and Stephanie Grubbs (Hydrogeologist, NC DENR Contractor) were responsible for gathering and reviewing data for this review and compiling all the information into the FYR Report for the EPA. Telephone and/or email discussions/interviews with Bill Joyner (EPA Remedial Project Manager), Nestor Young (EPA Section Chief) were conducted. Other activities conducted for this review included document review (see Appendix A); completion of a Site Inspection Checklist (see Appendix B); community interview documentation and public notice submitted to the local newspaper (see Appendix C) by the community involvement coordinator, Kerisa Coleman; and the FYR Report preparation.

6.2 Community Involvement

The EPA conducts all community involvement activities regarding the remedial action for the Site. On October 31, 2014, the EPA published a public notice in the *Washington Daily News* announcing the commencement of the FYR process for the Site. A copy of the public notice is included in Appendix C.

The EPA will make the final FYR Report available to the public. Upon completion of the FYR, the EPA will place copies of the document in the designated site repository: George H. and Laura E. Brown Library, 122 Van Norden St., Washington, NC 27889.

6.3 Document Review

This Five-Year Review consisted of a review of relevant documents including but not limited to the RODs (1993 and 1996); ROD Amendment (2005); First Five-Year Review Report (2010); recent monitoring data, Memorandum of Review of Soil Samples (2013), applicable groundwater cleanup

standards and other ARARs, as listed in the ROD, were also reviewed and checked for updates. See Appendix A for a complete list of documents reviewed.

6.4 ARAR Review

CERCLA Section 121(d)(2)(A) requires that Superfund remedial actions attain “a degree of cleanup of hazardous substance, pollutants, and contaminants released into the environment and of control of further release at a minimum which assures protection of human health and the environment.” CERCLA § 121(d)(1), 42 U.S.C § 9621(d)(1). The remedial action must achieve a level of cleanup that at least attains those requirements that are legally applicable or relevant and appropriate. CERCLA § 121(d)(2)(A), 42 U.S.C § 9621(d)(2)(A).

Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental, or state environmental, or facility siting laws, that specifically address a hazardous substance, remedial action, location, or other circumstance found at a CERCLA site. 40 C.F.R. § 300.5.

Relevant and appropriate requirements are those standards that, while not “applicable,” address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. 40 C.F.R. § 300.5. Only those state standards that are more stringent than federal requirements may be applicable or relevant and appropriate.

To-Be-Considered (TBC) criteria are non-promulgated advisories and guidance that are not legally binding, but should be considered in determining the necessary remedial action. For example, TBCs may be particularly useful in determining health-based levels where no ARARs exist, or in developing the appropriate method for conducting a remedial action.

Chemical-specific ARARs are health, or risk-based numerical values or methodologies which, when applied to site-specific conditions, result in the establishment of numeric values. These values establish an acceptable amount of concentration of a chemical that may remain in, or be discharged to, the ambient environment. Examples of chemical-specific ARARs include maximum contaminant levels under the Federal Safe Drinking Water Act and ambient water quality criteria enumerated under the Federal Clean Water Act.

Action-specific ARARs are technology, or activity-based requirements or limits on actions taken with respect to a particular hazardous substance. These requirements are triggered by a particular remedial activity, such as discharge of contaminated groundwater or in-situ remediation.

Location-specific ARARs are restrictions on hazardous substances, or the conduct of the response activities solely based on their location in a special geographic area. Examples include restrictions on activities in wetlands, sensitive habitats, and historic places.

Remedial actions are required to comply with the chemical-specific ARARs identified in the ROD. In performing the FYR for compliance with ARARs, only those ARARs that address the protectiveness of the remedy are reviewed. Because the remedy at the Site currently addresses groundwater contamination, this FYR will discuss compliance with chemical-specific groundwater ARARs only.

6.4.1 Current Applicable ARARs

It is the EPA's policy that ARARs are generally "frozen" at the time of the ROD signature unless a "new or modified requirement calls into question the protectiveness of the selected remedy." 55 Fed. Reg. 8757 (March 8, 1990). The NC Classifications and Water Quality Standards Applicable to the Groundwater of North Carolina, North Carolina Administrative Code (NCAC) Title 15A Subchapter 2L (NC 2L Standards), on which several of the remedial goals are based, were last amended on April 1, 2013. Twenty-two of the chemical-specific ARARs have changed for the COCs since the remediation goals (RGs) assigned in the ROD. Five compounds, in which the RGs were based on the NC 2L groundwater standards, heptachlor, heptachlor epoxide, toxaphene, pentachlorophenol, and chromium, have current NC 2L groundwater standards more stringent than the RGs set by the 1993 ROD. Aldrin and dieldren (RGs of 0.01 µg/L and 0.02 µg/L, respectively) also have amended NC 2L groundwater standards (0.002 µg/L for both compounds); however, the 1993 ROD set the RGs for aldrin and dieldren at the CRQLs. Toluene, chlorobenzene, and bis(2-ethylhexyl)phthalate all have RGs based on MCLs. Toluene and chlorobenzene were based on federal MCLs of 1,000 µg/L and 100 µg/L, but the amended NC 2Ls are 600 µg/L and 50 µg/L, respectively. Bis(2-ethylhexyl)phthalate has an RG of 4 µg/L and a current MCL of 6 µg/L, although the current NC 2L is 3 µg/L. Table 4 is a summary of previous and current ARARs for the groundwater COCs. The new standards do not indicate that the present standards are not protective.

Table 4: Comparison of 1993 ROD Groundwater Remediation Goals to Current ARARs

COC	1993 ROD Groundwater Remediation Goal	Current NC 2L (As of April 1, 2013)	Current Federal CRQL	Current Federal MCLs	ARAR change?
Pesticides- µg/L					
Aldrin	0.01 ^{a,b}	0.002	0.05	-	Yes
Heptachlor	0.076 ^c	0.008	0.05	-	Yes
Heptachlor epoxide	0.038 ^c	0.004	0.05	-	Yes
Alpha-BHC	0.014 ^d	0.2	0.05	-	Yes
Beta-BHC	0.047 ^d	0.2	0.05	-	Yes
Gamma-BHC (lindane)	0.0265 ^c	0.03	0.05	-	Yes
Dieldren	0.02 ^a	0.002	0.1	-	Yes
4,4-DDT	0.02 ^a	0.1	0.1	-	Yes
4,4-DDE	0.02 ^a	-	0.1	-	No
4,4-DDD	0.02 ^a	0.1	0.1	-	Yes
Endrin	0.20 ^a	2	0.1	-	Yes
Toxaphene	1.0 ^{a,c}	0.3	5	-	Yes

COC	1993 ROD Groundwater Remediation Goal	Current NC 2L (As of April 1, 2013)	Current Federal CRQL	Current Federal MCLs	ARAR change?
Chlordane	0.027 ^c	0.1	0.05	-	Yes
VOCs- µg/L					
Chlorform	0.19 ^c	70	0.5	-	Yes
1,2-Dichloroethane	0.38 ^c	0.4	0.5	5	Yes
1,2-Dichloropropane	0.56 ^c	0.6	0.5	5	Yes
Benzene	1 ^c	1	0.5	5	No
Toluene	1,000 ^f	600	0.5	1,000	Yes
Chlorobenzene	100 ^f	50	0.5	100	Yes
Total Xylenes	400 ^c	500	0.5	10,000	Yes
SVOCs- µg/L					
Bis(2-ethylhexyl)phthalate	4 ^f	3	-	-	Yes
Pentachlorophenol	1 ^c	0.3	5	-	Yes
Carazole	4.3 ^d	-	5	-	No
Inorganics- µg/L					
Beryllium	1 ^f	-	5	4	No
Chromium	50 ^c	10	10	100	Yes
Nickel	100 ^f	100	40	-	No
Lead	15 ^g	15	10	15	No
Mercury	1.10 ^c	1	-	2	Yes
Manganese	697 ^h	50	15	-	Yes
<p>a) The 1993 ARAR was based on the contract required quantitation limit (CRQL). b) According to the Site's 1993 ROD, the CRQL exceeded the risk-based concentration for aldrin. c) The 1993 ARAR was based on the North Carolina Groundwater Quality Standard (15NCAC 02I). d) The 1993 ARAR was based on the cancer slope factor value applied to a residential land use scenario at the Site. e) According to the Site's 1993 ROD. The CRQL exceeded the NC 2L f) The 1993 ARAR was based on the federal Maximum Contaminant Level (MCL). g) The 1993 ARAR for lead was based on the treatment technique action level. h) The 1993 ARAR was based on the average background concentration at the Site, which was greater than the NC 2L of 50 BOLD indicates the compound currently has a more stringent standard than proposed in the 1993 ROD. - No State (NC 2L) or Federal MCL and/or CRQL) standard exists for this compound µg/L = microgram per liter.</p>					

6.5 Data Review

OU1

The data review was completed by the EPA Region 4 Science and Ecosystem Support Division (SESD) and included in the 2014 Sampling Investigation Report. This report can be found in Appendix D of this FYR.

The 2014 Sampling Investigation Report covers the sampling event conducted at the Site during the week of April 14, 2014, and compares the data to the seven previous sampling events starting in March

2012. Representatives of the SESD conducted the groundwater sampling and field chemistry analyses. SESD conducted previous sampling investigations in January and August 2007; March 2008; March, September, and December 2012; and March, June, September and December 2013. During all of the 2012, 2013, and 2014 investigations, SESD personnel collected samples from the same 14 permanent monitor wells and analyzed them for the following analytes: VOCs, VOCs-natural attenuation (methane, ethane, and ethene), pesticides, toxaphene congeners, sulfate, chloride, nitrate/nitrite nitrogen, total organic carbon, ferrous iron (Fe^{2+}), sulfide, alkalinity and carbon dioxide. The following is a summary of the analytical issues and conclusion from the 2014 Sampling Investigation Report.

2014 SESD Sampling Investigation Report

Wells MW09A, MW10A, MW11A, MW12A, and MW15B consistently had detections of the same VOC and pesticide compounds at nearly the same concentration for each sampling event. A few compounds were detected at one event and not in another. For example, dieldrin was detected in MW11A after five quarters of non-detects and hexachloro-butadiene was detected in well MW11A in September 2013 and April 2014, but not in December 2013. The analytical results indicate no compounds were detected at or above any concentration listed in the four standards for the following wells: MW01A, MW01B, MW05A, MW05B, MW07A, MW07B, MW08B, MW09B, and MW16B from the March 2012 to April 2014 sampling events.

Figure 4 shows the location of the 14 wells associated with the quarterly sampling events at the Site. Pesticide and VOC results are listed only for those wells with detections of compounds at one time or another that have exceeded the RGs listed in Table 2 of this FYR report.

The analytical results for all eight events indicate that the laboratory minimum reporting limit (MRL) was not low enough to reach the RG for six compounds; aldrin, 4,4-DDT, 4,4,-DDD, chloroform, 1,2-Dichloroethane, and toxaphene. For 4,4-DDE and dieldrin, the MRLs were equal to or greater than the RGs. In some instances the MRL for several compounds was not low enough to reach one or more of the other comparison standards. In those cases, the MRL is listed. See Appendix D for the Sampling Investigation Report (Tables 4 and 5 within that report).

According to the Sampling Investigation Report and a SESD personnel discussion with the Remedial Project Manager (RPM) in 2012, it was decided to keep the results as reported since the RGs from the 1993 ROD are being reviewed to ensure that they still fall within EPA's acceptable risk range. In conclusion, four wells consistently show detections of pesticides above the RGs: MW09A, MW10A, MW11A, and MW12A. The volatile compound, 1,2-dichloroethane, is consistently detected above the RG in well MW15B. Figure 4 shows the results from the March 2012 to April 2014 sampling events and highlights the relatively small variability in the results. These same five wells also exceed one or more of the RGs.

6.6 Site Inspection

The Site inspection of the FCX Site was conducted on September 23, 2014. Attending the Site inspection were William Joyner (Remedial Project Manager, EPA), Nile Testerman (Environmental Engineer, NC DENR), Cyrus Parker (NC DOT), Chad Eichelberger (NC DOT), Woody Jarvis (NC DOT), Gordon Box (NC DOT) and Austin Smithwick (Park Boat Company). It was noted during the Site Inspection that all the monitoring wells were properly secured, locked, functioning and in good condition, and all wells were easily located and routinely sampled. It was also noted in the Site Inspection Checklist that contamination concentrations are declining in some wells; however, institutional controls are not in place. See Appendix B for the completed Site Inspection Checklist document.

6.7 Interviews

The EPA is responsible for contacting and interviewing the community surrounding the Site for concerns, comments, and/or questions regarding the remediation at the Site for the FYR. The following people were interviewed for this FYR. Summaries of their responses are below and the full interviews can be found in Appendix E.

William Joyner, EPA RPM

The OU1 and OU2 remedies are protective in the short term. ICs will need to be implemented for the Site. The Site's OU1 remedy currently protects human health and the environment in the short term because groundwater is not being used as a groundwater source on Site or off Site. The Site's OU2 remedy currently protects human health and the environment in the short term because most of the contaminated soil(s) have been excavated, and there is no exposure pathway for the contaminated soil that remains at the Site.

Park Boat Company, Owner

My overall impression is that everything is moving in the right direction. The NC Department of Transportation took part of the Site to make a bypass of the highway; but they have since completed that project. I purchased the remainder. My plan was to purchase it for the warehouse that is on Site for boat storage. We are a retail boat dealership. I needed a place to store boats and it is currently being used for that. At some point in the near future I may sub-lease a portion of it for some others for different businesses but cannot foresee what that may be at this present time. However, if we do, we would be in contact with the EPA to make sure that we are all on the same page.

Cyrus Parker, NC DOT

The remedy seems to be working well for the Site and community.

7.0 Technical Assessment

7.1 Question A: Is the remedy functioning as intended by the decision documents?

Yes. The remedy currently protects human health and the environment in the short-term because there are no known current exposure routes to contaminated soil or groundwater. However, the wells removed by the NCDOT during the construction of the highway bypass may need to be installed and sampled to determine the impact of the bypass on groundwater flow and the impact on the MNA remedy. Therefore, the effectiveness of the remedy needs to be evaluated before the next FYR. In order to be protective of human health and to preserve the effectiveness of the remedy, institutional controls must be implemented and maintained until remedial goals are met. These ICs may include, but not be limited to, deed restrictions or covenants.

Table 5: Institutional Controls (ICs) Evaluation Summary

Media	ICs Needed	ICs Called for in the Decision Documents	IC Objective	Instrument in Place	Notes
Groundwater	Yes	Yes	ICs may include, but not be limited to, deed restrictions or covenants.	None	Impacted Parcels: 01031971, 02011241, 15016903, 01028589, 15021595, 15021598, 15019372 and 15018945
Soil	Yes	No	Restrict land use to prevent the creation of an exposure pathway to contaminated soil at the end of Grimes road	None	Impacted Parcels: 01031971, 02011241, 15016903, 01028589, 15021595, 15021598, 15019372 and 15018945

7.2 Question B: Are the exposure assumptions, toxicity data, clean-up levels and remedial action objectives (RAOs) used at the time of the remedy still valid?

No. The NC Classifications and Water Quality Standards Applicable to the Groundwater of North Carolina, NCAC Title 15A Subchapter 2L (NC 2Ls), on which several of the remedial goals are based, were last amended on April 2013. Twenty-three of the chemical-specific ARARs have been amended for the COCs since the remediation goals assigned in the ROD and twelve of these amended NC 2Ls are currently more stringent than the RGs assigned in the ROD. Table 4 is a summary of the current NC 2L Groundwater Standards, MCLs and CRQLs for all the compounds. As stated previously, new standards do not indicate that the present standards are not protective.

There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy.

7.3 Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No additional information has come to light that could call into question the protectiveness of the remedy.

7.4 Technical Assessment Summary

According to documents, the site inspection, and discussions with the EPA, the exposure pathway to contaminated soil and groundwater has been mitigated. There are no known current exposure routes to contaminated soil or groundwater. Furthermore, the contaminated soil has been mitigated through source removal and groundwater is not used as a potable source of water. In order for the remedy to be protective in the long-term, the following actions are required: evaluate groundwater conditions to determine the impact of the highway bypass on groundwater flow and the MNA remedy; reevaluate the groundwater remediation goals to determine if modifications are needed; implement institutional controls until remedial goals are attained; and modify the decision document to include institutional controls for soils.

8.0 Issues, Recommendations and Follow-up Actions

Table 6: Issues, Recommendations and Follow-up Actions

OU(s): OU1	Issue Category: Monitoring			
	Issue: The wells removed/destroyed during the construction of the bypass may need to be reinstalled and sampled to determine the impact of the highway bypass on groundwater flow and the MNA remedy.			
	Recommendation: Evaluate groundwater conditions to determine the impact of the highway bypass on groundwater flow and the MNA remedy.			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	Yes	EPA/State/Property Owners/NCDOT	EPA	09/15/2017
OU(s): OU1	Issue Category: Remedy Performance			
	Issue: In 2013, the North Carolina Groundwater Standards were amended. Subsequently, the current North Carolina Groundwater Standards for several compounds are more stringent than the 1993 ROD.			

	Recommendation Reevaluate the groundwater remediation goals to determine if modifications are needed.			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	Yes	EPA/State	EPA	09/15/2017
OU(s): OU1 OU2	Issue Category: Institutional Controls			
	Issue: Institutional Controls have not been implemented.			
	Recommendation: Implement land use restrictions or other appropriate institutional controls at the Site.			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	Yes	EPA	EPA/State	09/15/2017
OU(s): OU1	Issue Category: Institutional Controls			
	Issue: The OU2 remedy does not required institutional controls for soil.			
	Recommendation: Modify the remedy to include institutional controls for soil.			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	Yes	EPA	EPA/State	09/15/2017

9.0 Protectiveness Statement

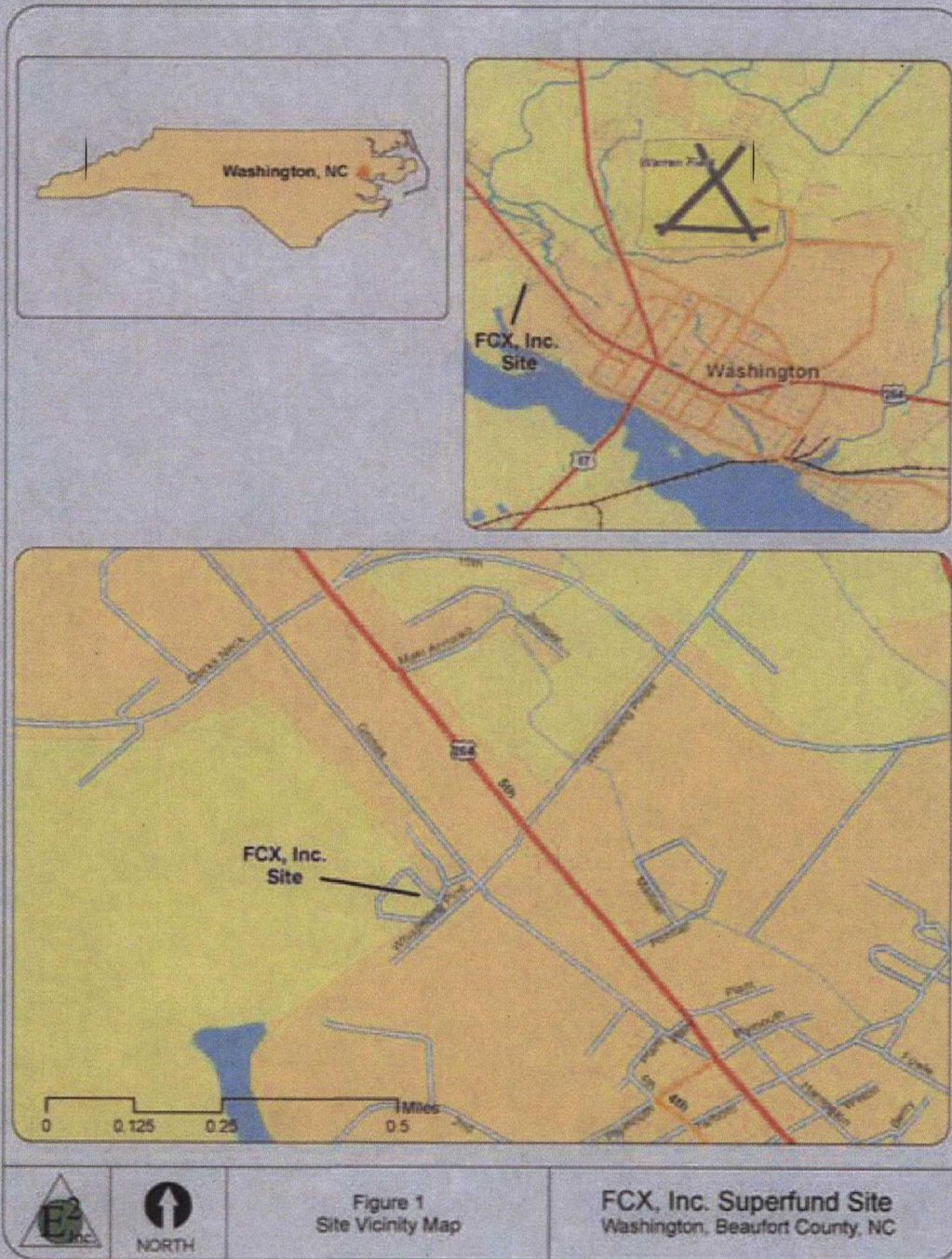
The remedy at the FCX Washington Plant Site currently protects human health and the environment in the short-term because there are no known current exposure routes to contaminated soil or groundwater. Furthermore, the contaminated soil has been mitigated through source removal and groundwater is not used as a potable source of water. In order for the remedy to be protective in the long-term, the following actions are required: evaluate groundwater conditions to determine the impact of the highway bypass on groundwater flow and the MNA remedy; reevaluate the groundwater remediation goals to determine if modifications are needed; implement institutional controls until remedial goals are attained; and modify the decision document to include institutional controls for soils.

10.0 Next Review

The next FYR will be due within five years of the signature/approval date of this FYR.

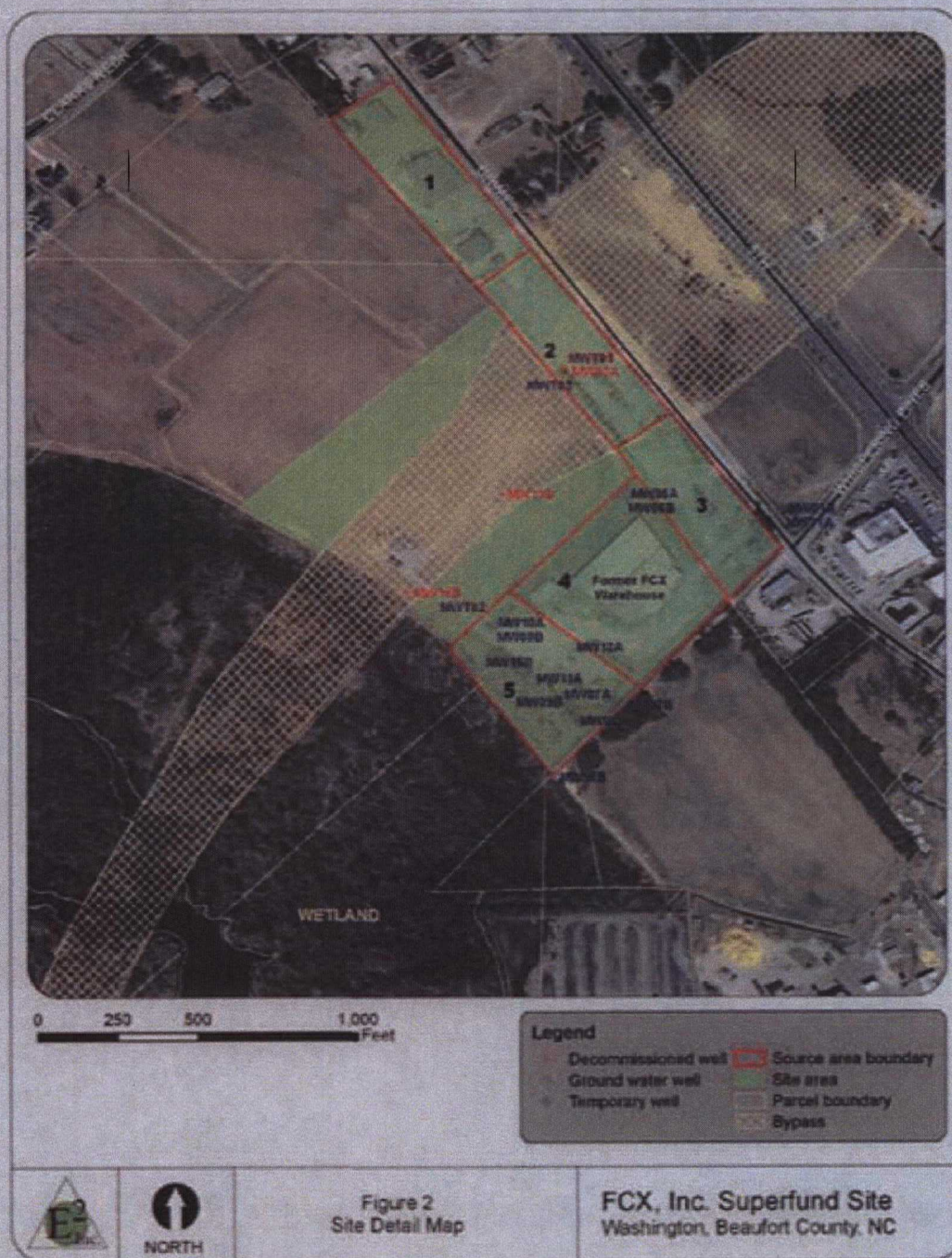
FIGURES

Figure 1: Site Location Map



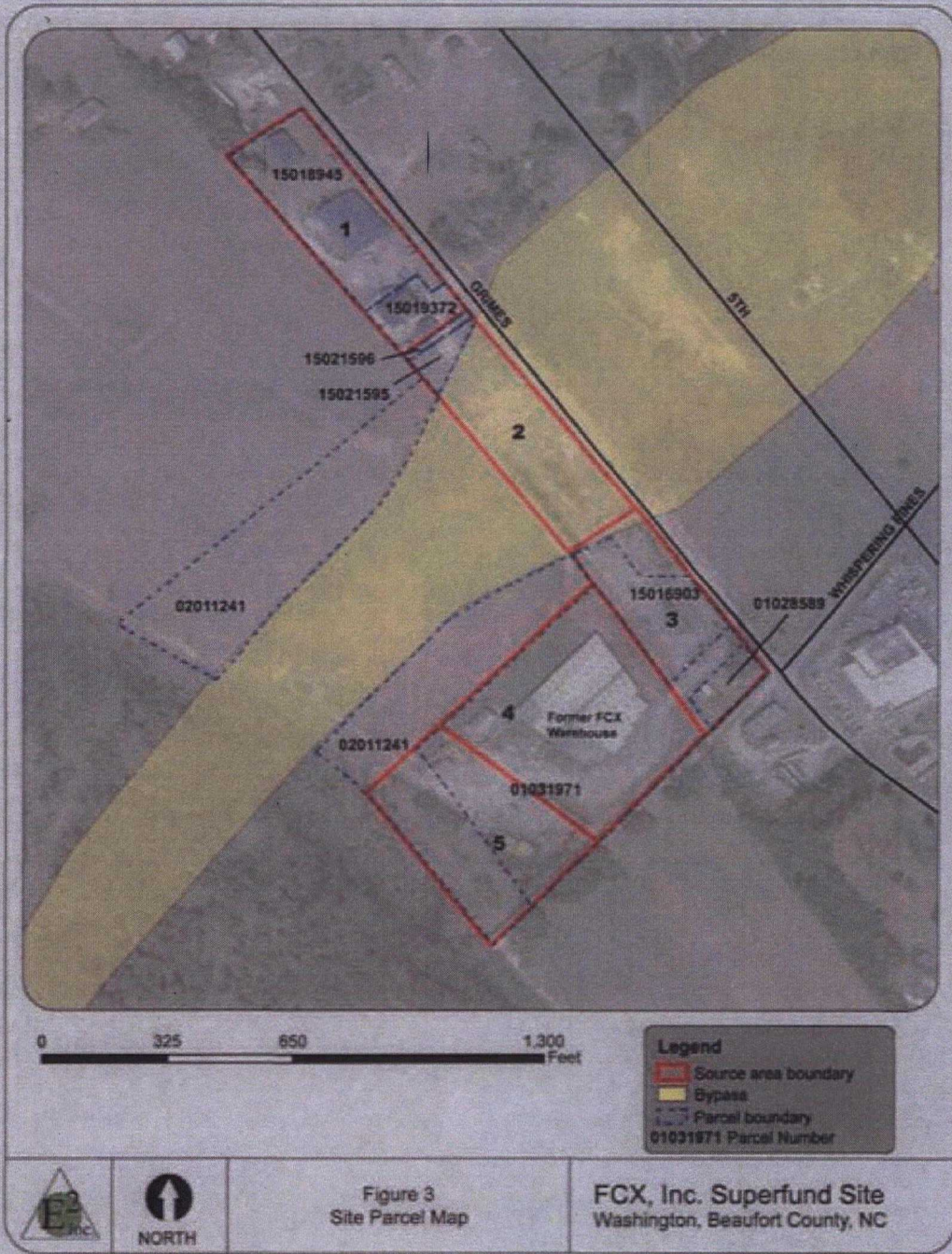
Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the site, and is not intended for any other purpose.

Figure 2: Site Detail Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the site, and is not intended for any other purpose.

Figure 3: Site Parcel Map



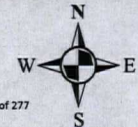
Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the site, and is not intended for any other purpose.

Figure 4 Results Compared to Remediation Goals March 2012 to April 2014



SESD Project ID# 14-0105
FCX Washington

FCX Washington
US EPA Region 4
Science & Ecosystem Support Division
Athens, GA 30605
April 2014



APPENDIX A
List of Documents Reviewed

**List of Documents Reviewed
FCX, Inc. – Washington Plant Site
Second Five-Year Review Report**

US EPA Record of Decision: FCX, Inc. (Washington Plant) NCD981475932. OU01, Washington, NC. September 15, 1993.

US EPA Record of Decision: FCX, Inc. (Washington Plant) NCD981475932. OU02. Washington, NC. December 18, 1996.

US EPA Record of Decision Amendment: FCX, Inc. (Washington Plant) NCD981475932. OU01, OU02. Washington, NC. September 8, 2005.

E2, Inc. First Five-Year Review Report: FCX, Inc. (Washington Plant) NCD981475932. Washington, NC. August 24, 2010.

North Carolina Administrative Code, Title 15A, Subchapter 2L, Section .0100, .0200, .0300, Classifications and Water Quality Standards Applicable to the Groundwater of North Carolina, April 1, 2013.

US EPA, Letter: Park Boat Company: FCX, Inc. (Washington Plant) NCD981475932. Washington, NC. May 20, 2013.

US EPA, Memorandum: Review of FCX Soils Samples: FCX, Inc. (Washington Plant) NCD981475932. Washington, NC. September 11, 2013.

US EPA, Final Sampling Investigation Report: FCX, Inc. (Washington Plant) NCD981475932. Washington, NC. August 18, 2014.

APPENDIX B
Site Inspection Checklist

2.	Site-Specific Health and Safety Plan G Contingency plan/emergency response plan Remarks _____	G Readily available G Readily available	G Up to date G Up to date	<input type="checkbox"/> N/A <input type="checkbox"/> N/A
3.	O&M and OSHA Training Records Remarks _____	G Readily available	<input checked="" type="checkbox"/> Up to date	G N/A
4.	Permits and Service Agreements G Air discharge permit G Effluent discharge G Waste disposal, POTW G Other permits Remarks _____	G Readily available G Readily available G Readily available G Readily available	G Up to date G Up to date G Up to date G Up to date	<input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A
5.	Gas Generation Records Remarks _____	G Readily available	G Up to date	<input type="checkbox"/> N/A
6.	Settlement Monument Records Remarks _____	G Readily available	G Up to date	<input checked="" type="checkbox"/> N/A
7.	Groundwater Monitoring Records Remarks _____	G Readily available	<input checked="" type="checkbox"/> Up to date	G N/A
8.	Leachate Extraction Records Remarks _____	G Readily available	G Up to date	<input checked="" type="checkbox"/> N/A
9.	Discharge Compliance Records G Air G Water (effluent) Remarks _____	G Readily available G Readily available	G Up to date G Up to date	<input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
10.	Daily Access/Security Logs Remarks _____	G Readily available	G Up to date	<input checked="" type="checkbox"/> N/A
IV. O&M COSTS				
1.	O&M Organization <input checked="" type="checkbox"/> State in-house <input type="checkbox"/> PRP in-house <input type="checkbox"/> Federal Facility in-house <input type="checkbox"/> Other _____	G Contractor for State G Contractor for PRP G Contractor for Federal Facility		

2.	O&M Cost Records <input type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> Funding mechanism/agreement in place Original O&M cost estimate _____ G Breakdown attached _____
	Total annual cost by year for review period if available
	From _____ To _____ Total cost _____ G Breakdown attached _____ Date Date From _____ To _____ Total cost _____ G Breakdown attached _____ Date Date From _____ To _____ Total cost _____ G Breakdown attached _____ Date Date From _____ To _____ Total cost _____ G Breakdown attached _____ Date Date From _____ To _____ Total cost _____ G Breakdown attached _____ Date Date
3.	Unanticipated or Unusually High O&M Costs During Review Period Describe costs and reasons: <u> N/A </u> _____ _____ _____
V. ACCESS AND INSTITUTIONAL CONTROLS G Applicable <input checked="" type="checkbox"/> N/A	
A. Fencing	
1.	Fencing damaged G Location shown on site map G Gates secured <input checked="" type="checkbox"/> N/A Remarks _____ _____
B. Other Access Restrictions	
1.	Signs and other security measures G Location shown on site map <input checked="" type="checkbox"/> N/A Remarks _____ _____
C. Institutional Controls (ICs)	

1. Implementation and enforcement				
Site conditions imply ICs not properly implemented	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	
Site conditions imply ICs not being fully enforced	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	
Type of monitoring (e.g., self-reporting, drive by) _____				
Frequency _____				
Responsible party/agency _____				
Contact _____				
	Name	Title	Date	Phone no.
Reporting is up-to-date	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	
Reports are verified by the lead agency	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	
Specific requirements in deed or decision documents have been met	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	
Violations have been reported	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	
Other problems or suggestions: <input type="checkbox"/> Report attached				

2. Adequacy <input type="checkbox"/> ICs are adequate <input type="checkbox"/> ICs are inadequate <input checked="" type="checkbox"/> N/A				
Remarks _____				

D. General				
1. Vandalism/trespassing <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No vandalism evident				
Remarks _____				

2. Land use changes on site <input checked="" type="checkbox"/> N/A				
Remarks _____				

3. Land use changes off site <input checked="" type="checkbox"/> N/A				
Remarks _____				

VL GENERAL SITE CONDITIONS				
A. Roads <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A				
1. Roads damaged <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Roads adequate <input checked="" type="checkbox"/> N/A				
Remarks _____				

B. Other Site Conditions				

Remarks _____ _____ _____ _____			
VII. LANDFILL COVERS G Applicable X N/A			
A. Landfill Surface			
1.	Settlement (Low spots) Areal extent _____ Depth _____ Remarks _____	G Location shown on site map G Settlement not evident	
2.	Cracks Lengths _____ Widths _____ Depths _____ Remarks _____	G Location shown on site map G Cracking not evident	
3.	Erosion Areal extent _____ Remarks _____	G Location shown on site map G Erosion not evident	
4.	Holes Areal extent _____ Remarks _____	G Location shown on site map G Holes not evident	
5.	Vegetative Cover G Grass G Cover properly established G No signs of stress G Trees/Shrubs (indicate size and locations on a diagram) Remarks _____		
6.	Alternative Cover (armored rock, concrete, etc.) Remarks _____	G N/A	
7.	Bulges Areal extent _____ Remarks _____	G Location shown on site map G Bulges not evident	
8.	Wet Areas/Water Damage G Wet areas G Location shown on site map Areal extent _____ G Ponding G Location shown on site map Areal extent _____ G Seeps G Location shown on site map Areal extent _____ G Soft subgrade G Location shown on site map Areal extent _____ Remarks _____	G Wet areas/water damage not evident	

9.	Slope Instability <input type="checkbox"/> Slides <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of slope instability Areal extent _____ Remarks _____	
B. Benches <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)		
1.	Flows Bypass Bench <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks _____	
2.	Bench Breached <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks _____	
3.	Bench Overtopped <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks _____	
C. Lettdown Channels <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)		
1.	Settlement <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of settlement Areal extent _____ Depth _____ Remarks _____	
2.	Material Degradation <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of degradation Material type _____ Areal extent _____ Remarks _____	
3.	Erosion <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of erosion Areal extent _____ Depth _____ Remarks _____	
4.	Undercutting <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of undercutting Areal extent _____ Depth _____ Remarks _____	
5.	Obstructions Type _____ <input type="checkbox"/> No obstructions <input type="checkbox"/> Location shown on site map Areal extent _____ Size _____ Remarks _____	

6.	Excessive Vegetative Growth G No evidence of excessive growth G Vegetation in channels does not obstruct flow G Location shown on site map Remarks _____	Type _____	Areal extent _____
D. Cover Penetrations G Applicable N/A			
1.	Gas Vents G Properly secured/locked G Evidence of leakage at penetration G N/A Remarks _____	G Active G Functioning G Needs Maintenance	G Passive G Routinely sampled G Needs Maintenance G Good condition G N/A
2.	Gas Monitoring Probes G Properly secured/locked G Evidence of leakage at penetration Remarks _____	G Functioning G Needs Maintenance	G Routinely sampled G Needs Maintenance G Good condition G N/A
3.	Monitoring Wells (within surface area of landfill) G Properly secured/locked G Evidence of leakage at penetration Remarks _____	G Functioning G Needs Maintenance	G Routinely sampled G Needs Maintenance G Good condition G N/A
4.	Leachate Extraction Wells G Properly secured/locked G Evidence of leakage at penetration Remarks _____	G Functioning G Needs Maintenance	G Routinely sampled G Needs Maintenance G Good condition G N/A
5.	Settlement Monuments Remarks _____	G Located	G Routinely surveyed G N/A
E. Gas Collection and Treatment G Applicable N/A			
1.	Gas Treatment Facilities G Flaring G Good condition Remarks _____	G Thermal destruction G Needs Maintenance	G Collection for reuse G Good condition G N/A
2.	Gas Collection Wells, Manifolds and Piping G Good condition Remarks _____	G Needs Maintenance	
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) G Good condition Remarks _____	G Needs Maintenance	G N/A

F. Cover Drainage Layer		G Applicable	N/A
1.	Outlet Pipes Inspected Remarks _____	G Functioning	G N/A
2.	Outlet Rock Inspected Remarks _____	G Functioning	G N/A
G. Detention/Sedimentation Ponds		G Applicable	N/A
1.	Siltation Areal extent _____ Depth _____ G Siltation not evident Remarks _____		G N/A
2.	Erosion Areal extent _____ Depth _____ G Erosion not evident Remarks _____		
3.	Outlet Works Remarks _____	G Functioning	G N/A
4.	Dam Remarks _____	G Functioning	G N/A
H. Retaining Walls		G Applicable	N/A
1.	Deformations Horizontal displacement _____ Vertical displacement _____ Rotational displacement _____ Remarks _____	G Location shown on site map	G Deformation not evident
2.	Degradation Remarks _____	G Location shown on site map	G Degradation not evident
I. Perimeter Ditches/Off-Site Discharge		G Applicable	N/A
1.	Siltation Areal extent _____ Depth _____ Remarks _____	G Location shown on site map	G Siltation not evident
2.	Vegetative Growth G Vegetation does not impede flow Areal extent _____ Type _____ Remarks _____	G Location shown on site map	G N/A

3.	Erosion Areal extent _____ Depth _____ Remarks _____	G Location shown on site map	G Erosion not evident
4.	Discharge Structure Remarks _____	G Functioning	G N/A
VIII. VERTICAL BARRIER WALLS G Applicable <input checked="" type="checkbox"/> N/A			
1.	Settlement Areal extent _____ Depth _____ Remarks _____	G Location shown on site map	G Settlement not evident
2.	Performance Monitoring Type of monitoring _____ G Performance not monitored Frequency _____ G Evidence of breaching Head differential _____ Remarks _____		
IX. GROUNDWATER/SURFACE WATER REMEDIES G Applicable <input checked="" type="checkbox"/> N/A			
A. Groundwater Extraction Wells, Pumps, and Pipelines G Applicable <input checked="" type="checkbox"/> N/A			
1.	Pumps, Wellhead Plumbing, and Electrical G Good condition G All required wells properly operating G Needs Maintenance G N/A Remarks _____		
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances G Good condition G Needs Maintenance Remarks _____		
3.	Spare Parts and Equipment G Readily available G Good condition G Requires upgrade G Needs to be provided Remarks _____		
B. Surface Water Collection Structures, Pumps, and Pipelines G Applicable <input checked="" type="checkbox"/> N/A			
1.	Collection Structures, Pumps, and Electrical G Good condition G Needs Maintenance Remarks _____		
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances G Good condition G Needs Maintenance Remarks _____		

3.	Spare Parts and Equipment <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks _____
C. Treatment System <input type="checkbox"/> Applicable <input type="checkbox"/> N/A	
1.	Treatment Train (Check components that apply) <input type="checkbox"/> Metals removal <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Bioremediation <input type="checkbox"/> Air stripping <input type="checkbox"/> Carbon adsorbers <input checked="" type="checkbox"/> Filters <i>Carbon Filter System is good shape. All other wells taken off-line</i> <input type="checkbox"/> Additive (e.g., chelation agent, flocculent) _____ <input type="checkbox"/> Others _____ <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> Sampling ports properly marked and functional <input type="checkbox"/> Sampling/maintenance log displayed and up to date <input type="checkbox"/> Equipment properly identified <input type="checkbox"/> Quantity of groundwater treated annually _____ <input type="checkbox"/> Quantity of surface water treated annually _____ Remarks _____
2.	Electrical Enclosures and Panels (properly rated and functional) <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____
3.	Tanks, Vaults, Storage Vessels <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs Maintenance Remarks _____
4.	Discharge Structure and Appurtenances <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____
5.	Treatment Building(s) <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair <input type="checkbox"/> Chemicals and equipment properly stored Remarks _____
6.	Monitoring Wells (pump and treatment remedy) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks _____
D. Monitoring Data	
1.	Monitoring Data <input checked="" type="checkbox"/> Is routinely submitted on time <input checked="" type="checkbox"/> Is of acceptable quality
2.	Monitoring data suggests: <input checked="" type="checkbox"/> Groundwater plume is effectively contained <input checked="" type="checkbox"/> Contaminant concentrations are declining

E. Monitored Natural Attenuation			
1.	Monitoring Wells (natural attenuation remedy)		
	<input checked="" type="checkbox"/> Properly secured/locked	<input checked="" type="checkbox"/> Functioning	<input checked="" type="checkbox"/> Routinely sampled
	<input checked="" type="checkbox"/> All required wells located	<input type="checkbox"/> Needs Maintenance	<input checked="" type="checkbox"/> Good condition
	Remarks _____		<input type="checkbox"/> N/A
X. OTHER REMEDIES			
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.			
XI. OVERALL OBSERVATIONS			
A. Implementation of the Remedy			
Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).			
<p><i>Monitored Natural Attenuation will occur until all groundwater is below NC-groundwater standards. Long term action sampling indicates the plume is attenuating toward state standards</i></p>			
B. Adequacy of O&M			
Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.			
<i>NA</i>			
C. Early Indicators of Potential Remedy Problems			

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

N/A

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

N/A

APPENDIX C
Public Notice



**U. S. Environmental Protection Agency, Region 4
Announces a Five-Year Review
for the FCX, Inc. (Washington Plant) Superfund Site,
Washington, Beaufort County, North Carolina**

Purpose/Objective: The U.S. Environmental Protection Agency (EPA) is conducting a Five-Year Review of the remedy for the FCX, Inc. (Washington Plant) site (Site) in Washington, North Carolina. The purpose of the Five-Year Review is to ensure that the selected cleanup actions effectively protect human health and the environment.

Site Background: The FCX, Inc (Washington Plant) site is located within the city limits of Washington, North Carolina. The former Farmer's Cooperative Exchange (FCX) Inc. facility operated there as a farm supply distribution center, which repackaged and sold pesticides, herbicides, and tobacco treating chemicals between 1945 and 1985. From 1960 to 1981, an unknown amount of chemical waste generated by FCX was placed in plastic containers and paper bags and buried in an on-site landfill southwest of the former FCX warehouse. Sampling studies conducted at the Site by local, state, and federal agencies found soil and ground water to be contaminated in five source areas. The Site was finalized on EPA's National Priorities List in 1989. The primary contamination risk at the Site is the presence of pesticides, volatile organic compounds (VOCs), semi-VOCs, and metals in ground water.

Cleanup Actions: Removal actions were initiated at the Site between 1989 and 1990 to excavate contaminated soil in source areas at the Site. The Site is comprised of two operable units (OUs). The Record of Decision (ROD) for operable unit 1 (OU1) was signed on September 15, 1993 to address ground water contamination. The remedy selected for OU1 consisted of a ground water extraction system and on-site treatment of ground water using air stripping, carbon adsorption, precipitation, and ion exchange. The ROD for OU2 was signed on December 18, 1996 to address soil contamination. The remedy selected for OU2 required no further action to treat the soil because all of the soil and source contamination were removed during a time-critical removal action that was completed in a three stage process between 1990 and 1992. In 1996, the contaminated soil excavated during the time-critical removal action was treated using thermal desorption, which completed the removal response. On September 8, 2005, a ROD Amendment (AROD) was signed to update the selected remedy for OU1. The AROD changed the selected remedy for ground water from the use of an extraction and treatment system to monitored natural attenuation (MNA) and added a requirement for institutional controls to prevent ground water use until cleanup goals are met. MNA is ongoing at the Site.

Five-Year Review Schedule: The National Contingency Plan requires that remedial actions that result in any hazardous substances, pollutants, or contaminants remaining at the Site above levels that allow for unlimited use and unrestricted exposure be reviewed every five years to ensure protection of human health and the environment. The second of these Five-Year Reviews for this Site will be completed by September 30, 2015.

EPA invites community participation in the Five-Year Review process: EPA is conducting this Five-Year Review to evaluate the effectiveness of the remedy and to ensure that the remedy remains protective of human health and the environment. As part of the Five-Year Review process, EPA is available to answer any questions about the Site. Community members who have questions about the Site, the Five-Year Review process, or who would like to participate in a community interview, are asked to contact the following:

William Joyner, Remedial Project Manager
404-562-8795
joyner.william@epa.gov

Kerisa Coleman, Community Involvement Coordinator
404-562-8831
coleman.kerisa@epa.gov

Mailing Address:
EPA Region 4
61 Forsyth St. S.W.
Atlanta, GA 30303-8960

Additional site information is also available at the Site's document repository, located at George H. and Laura E. Brown Library, 122 Van Norden Street, Washington, North Carolina, 27889 and online:
<http://cfpub.epa.gov/supercpad/cursites/csitinfo.cfm?id=0404280>

APPENDIX D
Final Report April 2014 FCX Groundwater Sampling Events
Sampling Investigation Report



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4**

Science and Ecosystem Support Division
Enforcement and Investigations Branch
980 College Station Road
Athens, Georgia 30605-2720

August 20, 2013

4SESD-EIB

MEMORANDUM

SUBJECT: Groundwater Sampling Investigation Report for FCX Washington
Washington, North Carolina
SESD Project #13-0365 & 13-0416

FROM: Kevin Simmons, Life Scientist *KS*
Superfund and Air Section

THRU: Laura Ackerman, Chief *Laura Ackerman*
Superfund and Air Section

TO: Bill Joyner, RPM
Superfund Division

Attached is the report for the FCX Washington site groundwater and soil sampling investigations conducted the week of June 03, 2013 in Washington, North Carolina. Please send questions or comments to Kevin Simmons at simmons.kevin@epa.gov or call 706.355.8730.

Attachment

United States Environmental Protection Agency

Region 4

Science and Ecosystem Support Division

980 College Station Road

Athens, Georgia 30605-2720



Sampling Investigation Report

FCX Washington

Washington, North Carolina

Conducted June 03-06, 2013

Report Issued August 21, 2013

SESD Project Identification Numbers: 13-0365

& 13-0416 (Dioxin)

Requestor: William Joyner, RPM

Superfund Division

61 Forsyth St. SW

Atlanta, Georgia 30303-8960

SESD Project Leader: Kevin Simmons

Superfund & Air Section

980 College Station Road

Athens, Georgia 30605-2720

Title and Approval Sheet

Title: Sampling Investigation Report for FCX Washington
Final Report

Approving Official:



Laura Ackerman, Chief
Superfund & Air Section
Enforcement & Investigations Branch

08/22/13
Date

SESD Project Leader:



Kevin Simmons, Life Scientist
Superfund & Air Section
Enforcement & Investigations Branch

8/21/2013
Date

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Sampling Investigation Report for FCX Washington
SESD Project ID Numbers: 13-0365
Conducted June 03-06, 2013

INTRODUCTION

This report covers the fifth sampling event at the FCX site since March 2012. During the week of June 03, 2013, representatives of the US EPA Region 4 Science and Ecosystem Support Division (SESD) conducted groundwater sampling at the FCX site in Washington, North Carolina. The investigation was requested by William Joyner, Remedial Project Manager (RPM), Region 4 Superfund Division. Personnel from the Environmental Services Assistance Team (ESAT), Integrated Laboratory Systems (ILS) also assisted with the event. The following personnel participated in the investigation:

<u>NAME</u>	<u>ORGANIZATION</u>	<u>DUTIES</u>
Kevin Simmons	US EPA SESD	Project Leader
Jairo Castillo	US EPA SESD	Sampler
Cornell Gayle	US EPA SESD	Safety Officer Sampler Geologist
Brian Herndon	ESAT-ILS	Sampler Instrument Calibration
Louis Pounds	ESAT-ILS	Field Chemist
Jeff Wilmoth	ESAT-ILS	Field Chemist

The data tables include the analytical results from March, September, December 2012 plus March and June 2013 for comparison. Only analytical data sheets for June 2013 are included in this report since prior data sheets are in previous reports.

BACKGROUND

The Farmers Cooperative Exchange (FCX) operated a farm supply distribution center on the 12-acre FCX-Washington site at the corner of Grimes Rd and Whispering Pines Rd located in Washington, Beaufort County, North Carolina, from 1945 to 1985. The distribution center repackaged and sold pesticides, herbicides, and tobacco-treating chemicals. In the early 1970s, a large trench was filled with pesticide wastes and other agricultural chemicals. The company filed for bankruptcy and began liquidating its assets in 1985. Chemicals of concern are pesticides, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals.

Additionally, the North Carolina Department of Transportation has constructed a 15.5 mile improvement of the US 17 corridor, which included four parcels of land on the FCX-Washington site. Construction of the highway bypass destroyed wells MW03A, MW03B, MW13B and MW14B.

SESD conducted previous sampling investigations in January 2007, August 2007, March 2008, March 2012, September 2012, and December 2012 and March 2013. During all of

the 2012 and 2013 investigations, SESD personnel collected samples from 14 permanent monitor wells.

A local businessman has expressed interest in purchasing the site, thus dictating the need for additional soil data. A prior risk assessment indicated the site soils were within EPA's acceptable risk range for the industrial/commercial land use scenario. The risk assessment did not evaluate the residential land use scenario for most of the source areas. Therefore, it was unknown if the site falls into the unlimited use and unrestricted exposure category.

To determine if the site soils meet the residential land use criteria, the Region 4 TSS recommended that three 5-point composite surface soil samples be collected from 0" - 6" below ground surface in source areas 3, 4, and 5 of the FCX site. See Figure 4 from E² Inc., page 13. In areas with a layer of gravel over the soil, the gravel was removed and the sample interval began below the gravel. All soil samples were analyzed for pesticides, semi-volatile organic compounds (SVOCs), and metals. The soil samples from areas 4 and 5 were analyzed for dioxin TEQ. Soil sample Station IDs and Sample IDs were determined in the field. GPS coordinates for each composite sample were collected from a single, central point with a Trimble Geo XH.

At this time, one more sampling event is scheduled for September of 2013.

SUMMARY

During each sampling event fourteen groundwater samples were collected and analyzed for the following analytes: volatile organic compounds (VOCs), VOCs-natural attenuation, pesticides, toxaphene congeners, sulfate, chloride, nitrate/nitrite nitrogen, total organic carbon, ferrous iron (Fe²⁺), sulfide, alkalinity and carbon dioxide.

The Sample IDs in the tables have remained consistent through March 2013. For the June 2013 event, a prefix of "MW" was inadvertently added to the ID which is shown on the chain of custody. To maintain consistency, the sample IDs in the tables for June 2013 have the "MW" removed.

Table 1 lists the wells sampled during the March 2012 through June 2013 events including GPS coordinates, water levels at the time of sampling, and the analytical methods used. Table 2 lists the Remedial Action Goals for the FCX site.

Prior to sample collection, wells were monitored for turbidity, pH, dissolved oxygen (DO), conductivity, oxidation reduction potential (ORP), and temperature. Water quality parameter measurements of pH, conductivity, and turbidity were recorded until the following conditions were met for three successive readings; conductivity within 5%, pH within 0.1 standard units and turbidity less than 10 NTU or as close as reasonably achievable. DO and ORP were not used to indicate the stability of groundwater. Groundwater field parameter measurements and field chemistry analytical results are listed in Table 3.

Table 4 contains the pesticide analytical results from the five sampling events from March 2012 to June 2013. Since the results have been consistent from event to event, only the wells with detections are listed. The results are compared to the North Carolina

Groundwater Quality Standards (NC GWQS), Residential Screening Levels for Tapwater (RSL Tapwater), the Drinking Water Maximum Contaminant Levels (MCL), and the FCX Remediation Goals (FCX RGs), if applicable.

Table 5 summarizes the VOC natural attenuation results for the last five events from March 2012 through June 2013.

Table 6 summarizes the VOC results for the five events from March 2012 through June 2013 with comparisons to the standards listed in Table 4. Only the wells with detections are listed.

Table 7 summarizes the chloride, sulfate, nitrate nitrite and total organic carbon (TOC) results for the five events from March 2012 through March 2013.

The three five-point composite soil samples were analyzed for pesticides, SVOCs, and metals. Two of the samples were also analyzed for dioxin TEQ.

Tables 8, 9, and 10 summarize the pesticide, SVOC, and metals results, respectively for the three soil samples, FCX03, FCX04, and FCX05. **Table 11** contains the dioxin results for FCX04 and FCX05.

Figure 1 shows the location of the 14 wells associated with the quarterly sampling events at FCX. Data are shown only for those wells at or above the RG. The analytical results indicate no compounds were detected at or above the RG for the following wells: MW01A, MW01B, MW05A, MW05B, MW07A, MW07B, MW08B, MW09B, and MW16B for the period from March 2012 to June 2013.

Figure 2 shows the location of the soil samples.

Appendix A contains copies of the field logbooks and **Appendix B** contains the laboratory analytical data sheets. The field chemistry logbooks for sulfide, alkalinity, ferrous iron and carbon dioxide are in the project file at SESD.

DISCUSSION

Well Condition

Most wells were in good condition since vegetation and dirt had been removed from some wells during previous visits to the site.

Sampling

All groundwater sampling was done in accordance with the SESD Groundwater Sampling Procedure SESDPROC-301-R3. Purging and sampling of each well was accomplished via peristaltic pump.

All soil sampling was done in accordance with the SESD Soil Sample Procedure SESDPROC-300-R2. Sample FCX03 was a five point composite sample collected from the yard around the house at the southeast corner of Grimes Rd and Whispering Pines Rd

which corresponds to Area 3 on Figure 4. The GPS coordinate is from the center of the yard. Sample FCX04 was a five point composite sample collected from the southeast and southwest sides of the old FCX warehouse which corresponds to Area 4 on Figure 4. The top 2" - 4" of gravel was removed to obtain the soil beneath it. The GPS coordinate is the southernmost corner of the warehouse. FCX05 was a five point composite sample collected from the southwestern side of the site which corresponds to Area 5 on Figure 4. The GPS coordinate is from the center point of the sample line.

Investigation Derived Waste (IDW)

Purge water from the monitoring wells was discharged onto the ground based on previous analytical results. Excess soil was placed back in the holes.

Analytical Results - Groundwater

Well MW09A consistently exceeded the RG for dieldrin ($0.02\mu\text{g l}$) with results of 0.072, 0.070 (split), 0.080, 0.086, 0.067, and $0.064\mu\text{g l}$, respectively, for the five events.

MW10A exceeded the RGs for aldrin and dieldrin during all five events. Alpha-BHC was detected at or above the RG during the first two events and below the RG for the last three events. Beta-BHC was detected above the RG in three out of the five events. Gamma-BHC was detected above the RG during the first two events and below the RG during the last two. Heptachlor epoxide was detected above the RG during the last four of five events.

Well MW11A exceeded the RG for 4,4'-DDD ($0.02\mu\text{g l}$) for all five events with results of 0.42, 0.54, 0.72, 0.49, 0.46, and 0.56 (split) $\mu\text{g l}$ respectively. The RG for aldrin ($0.01\mu\text{g l}$) was also exceeded with results of 1.8, 2.0, 2.2, 2.0, 2.0, and 2.3 (split) $\mu\text{g l}$ respectively. Dieldrin was only detected at the RG in March 2012 with a result of $0.20\mu\text{g l}$.

MW12A exceeded the RG for dieldrin ($0.02\mu\text{g l}$) with results of 0.037, 0.047, 0.049, 0.055, and $0.54\mu\text{g l}$, respectively, for the five events.

Well MW15B consistently exceeded the RG ($0.38\mu\text{g l}$) and MRL ($0.50\mu\text{g l}$) for 1,2-Dichloroethane for all five events with results of 5.1, 5.1, 5.1, 5.0, 5.8, and $5.7\mu\text{g l}$. Results are listed in Table 6.

In Table 4, some analytical results are qualified as non-detect (U), but the minimum reporting limit (MRL) may still be greater than a listed standard.

The analytical results for all five sampling events indicate that the laboratory minimum reporting limit (MRL) was not low enough to reach the RG for six compounds: aldrin, 4,4-DDT, 4,4-DDD, chloroform, 1,2-Dichloroethane and toxaphene. For consistency with the March 2012 report, the results will be used as reported. The remediation goals from the 1993 Record of Decision (ROD) are still under review to ensure that they still fall within EPA's acceptable risk range.

Analytical Results – Soil

The pesticides DDD, DDE, DDT, and gamma-chlordane were detected in all three samples. Dieldrin, endrin, and alpha-chlordane were also detected in sample FCX04. Only DDT, in sample FCX05, exceeded the RG of 1.7mg kg with a result of 17000µg kg (17mg kg). See Table 8.

The SVOC results indicated no detections at or above the reporting limit, however where the minimum reporting limit (MRL) exceeded the RSL value, the MRL is shown. The compounds 3,3'-Dichlorobenzidine and 4-Chloroaniline in sample FCX03 were qualified as Rejected due to a matrix spike recovery of less than 10%. These compounds are not listed as contaminants of concern for the ACW site. See Table 9.

Only the RSL for arsenic (0.39mg kg) was exceeded for all three samples. See Table 10. Dioxin TEQ is summarized in Table 11.

The pesticides MRLs for FCX05 are elevated due to the high concentrations of DDD, DDE and DDT and the subsequent dilutions needed for analysis.

2,3,7,8-tetrachlorodibenzodioxin is the only dioxin furan congener with a RSL 0.0000045mg kg or 4.5 ng kg. This congener was not detected in either soil sample at or above the reporting limit. Several other dioxin compounds were detected and are listed in Table 11.

METHODOLOGY

Field activities were conducted in accordance with SESD's Field Branches Management and Quality System Procedures and the following SESD field measurement and sampling operating procedures:

- SESDPROC-100-R3. Field pH Measurement
- SESDPROC-101-R5. Field Specific Conductance Measurement
- SESDPROC-102-R3. Field Temperature Measurement
- SESDPROC-103-R3. Field Turbidity Measurement
- SESDPROC-105-R2. Groundwater Level and Well Depth Measurement
- SESDPROC-106-R2. Field Dissolved Oxygen Measurement
- SESDPROC-113-R1. Field Oxidation-Reduction Potential (ORP) Measurement
- SESDPROC-202-R2. Investigation Derived Waste
- SESDPROC-203-R2. Pump Operation
- SESDPROC-205-R2. Field Equipment Cleaning and Decontamination
- SESDPROC-209-R2. Packaging, Marking, Labeling and Shipping of Environmental and Waste Samples
- SESDPROC-300-R2. Soil Sampling
- SESDPROC-301-R3. Groundwater Sampling

All field measurement and sampling procedures were performed by the SESD Enforcement and Investigations Branch and ILS personnel. Chain of custody documents were prepared and signed by Kevin Simmons. Samples were transported to the SESD laboratory by EPA personnel and the dioxin samples were shipped to Analytical Resources, Inc.

Samples were analyzed at the SESD laboratory in accordance with the Analytical Support Branch (ASB) Laboratory Operations and Quality Assurance Manual (LOQAM), February 2013. The ASB laboratory is accredited by ISO 17025. Samples analyzed in the field were in accordance with the methods listed in Table 1 and the ASB LOQAM when applicable. The dioxin samples were analyzed according to Statement of Work DLM02.2.

FIELD QUALITY CONTROL

No preservative blanks were collected because individual vials of sulfuric acid were used which had already undergone QA/QC verification.

Trip blanks were prepared by the SESD laboratory, taken to the field and transported to the laboratory along with the groundwater samples. The samples were analyzed for VOC MNA compounds (methane, ethane and ethene) and VOCs. No analytes were detected at or above the reporting limit in any trip blank sample.

Well MW11A was designated as a duplicate location. The duplicates were designated MW11A0613 and MW11AD0613. The analytical results for the samples and their respective duplicates showed excellent correlation indicating proper sample collection and handling procedures.

CONCLUSION

Particular pesticide results for wells MW09A, MW10A, MW11A, and MW12A are consistently above the RGs. In well MW15B, 1,2-dichloroethane is consistently detected above the RG. Figure 1 shows the results from the March 2012 to June 2013 sampling events and highlights the rather small variability in the results.

These groundwater and soil results will be used by the RPM and the Technical Services Section to further evaluate the groundwater conditions at the FCX Washington site and may also be used in discussions regarding updating or modifying the FCX Washington Record of Decision (ROD).

REFERENCES

USEPA SESD, "Field Branches Quality System and Technical Procedures". Most recent versions: <http://www.epa.gov/region4/sesd/fbqstp>

USEPA SEDS, Quality Assurance Project Plan, FCX Washington. March 2012

USEPA SEDS, Sampling Investigation Final Report for FCX Washington. June 2012

USEPA SEDS, Quality Assurance Project Plan, FCX Washington. August 2012

USEPA SEDS, Groundwater Sampling Investigation Report for FCX Washington.
November 2012

USEPA SEDS, Quality Assurance Project Plan, FCX Washington. December 2012

USEPA SEDS, Quality Assurance Project Plan, FCX Washington. February 2013

USEPA SEDS, Groundwater Sampling Investigation Report for FCX Washington. May
2013

USEPA SEDS, Quality Assurance Project Plan, FCX Washington. May 2013

USEPA SEDS, Analytical Support Branch Laboratory Operations and Quality Assurance
Manual, February 2013

USEPA FCX Record of Decision, Remediation Goals. 1993

Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites,
RSL Maximum Contaminant Level. November 2012
RSL Tap Water. November 2012

North Carolina Groundwater Quality Standards (NC GWQS). January 2010

Figure 4, Institutional Control (IC) Base Map.

Source: First Five Year Review Report for FCX Inc. E² Inc. August 2010, p 36

**Table 1
FCX Well and Analysis Information**

Station ID	Longitude	Latitude	Date					Chloride/Sulfate Classical/Nutrient Analyses:EPA 300.0	(Nitrate and/or Nitrite) Classical/Nutrient Analyses:EPA 353.2	(Total Organic Carbon) Classical/Nutrient Analyses:SM 5310B	(Organochlorine Pesticides) Organochlorine Pesticides:EPA 8081	(Toxaphene Congeners) Organochlorine Pesticides:EPA 8276	(Natural Attenuation Compounds) Volatile Organics:ASB V100	(Volatile Organic Compounds) Volatile Organics:EPA 8260C	Ferrous Iron (Fe2+) Hach Method 8146	Sulfide Hach Method 8131	Alkalinity Hach Method 8203	Carbon Dioxide Hach Method 8205	(SemiVolatile Organic Compounds) SemiVolatile Organics:EPA 8270D	(Total Metals) Metals:EPA 200.8 & 6010	(Dioxins/Furans) Dioxin:Statement of Work DLM02.2
			March 2012	September 2012	December 2012	March 2013	June 2013														
			Water Depth Below Top of Casing (Ft)																		
MW01A	-77.072985	35.559818	4.34	3.55	4.86	3.89	4.31	x	x	x	x	x	x	x	x	x	x	x	-	-	-
MW01B	-77.072965	35.559851	4.25	3.44	4.85	3.78	4.32	x	x	x	x	x	x	x	x	x	x	x	-	-	-
MW05A	-77.074302	35.559966	7.62	6.6	8.18	7.07	7.69	x	x	x	x	x	x	x	x	x	x	x	-	-	-
MW05B	-77.074333	35.559937	7.75	6.83	8.24	7.19	7.76	x	x	x	x	x	x	x	x	x	x	x	-	-	-
MW07A	-77.074384	35.558147	5.0	4.35	5.28	4.7	5.11	x	x	x	x	x	x	x	x	x	x	x	-	-	-
MW07B	-77.074351	35.558168	4.96	4.31	5.33	4.62	5.06	x	x	x	x	x	x	x	x	x	x	x	-	-	-
MW08B	-77.075461	35.558827	10.22	9.49	10.57	9.82	10.29	x	x	x	x	x	x	x	x	x	x	x	-	-	-
MW09A	-77.074751	35.558054	8.15	7.55	8.35	7.82	8.22	x	x	x	x	x	x	x	x	x	x	x	-	-	-
MW09B	-77.074795	35.558085	8.18	7.62	8.42	7.84	8.26	x	x	x	x	x	x	x	x	x	x	x	-	-	-
MW10A	-77.075453	35.558873	7.46	6.72	7.79	6.98	7.53	x	x	x	x	x	x	x	x	x	x	x	-	-	-
MW11A	-77.075125	35.558394	7.57	6.85	7.83	7.18	7.71	x	x	x	x	x	x	x	x	x	x	x	-	-	-
MW12A	-77.074777	35.558661	6.36	5.69	6.64	5.88	6.42	x	x	x	x	x	x	x	x	x	x	x	-	-	-
MW15B	-77.075553	35.558528	9.97	9.47	9.92	10.06	10.61	x	x	x	x	x	x	x	x	x	x	x	-	-	-
MW16B	-77.074928	35.557554	4.59	4.19	4.84	4.38	4.71	x	x	x	x	x	x	x	x	x	x	x	-	-	-
FCX03	-77.073307	35.5594356	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-	x	x	-
FCX04	-77.074302	35.5588149	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-	x	x	x
FCX05	-77.075157	35.5585368	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-	x	x	x

Table 2
Remedial Action Goals for FCX Washington

Contaminant	Remediation Level (µg/L)
Aldrin	0.01
Heptachlor	0.076
Heptachlor Epoxide	0.038
Alpha-BHC	0.014
Beta-BHC	0.047
Gamma-BHC	0.0265
Dieldrin	0.02
4,4-DDT	0.02
4,4-DDE	0.02
4,4-DDD	0.02
Endrin	0.20
Toxaphene	1.0
Chlordane	0.027
Chloroform	0.19
1,2-Dichloroethane	0.38
1,2-Dichloropropane	0.58
Benzene	1.0
Toluene	1,000
Chlorobenzene	100
Total Xylenes	400
Bis (2-ethylhexyl) phthalate	4
Pentachlorophenol	1
Carbazole	4.3
Beryllium	1
Chromium	50
Nickel	100
Lead	15
Mercury	1.10
Manganese	697

Table 3
FCX Field Chemistry and Paramter Results
March 2012 to June 2013

Station ID	MW01A	MW01A	MW01A	MW01A	MW01A	MW01B	MW01B	MW01B	MW01B	MW01B	MW05A	MW05A	MW05A	MW05A	MW05A	MW05B	MW05B	MW05B	MW05B	MW05B	MW07A	MW07A	MW07A	MW07A	MW07A		
Sample ID	01A0312	01A0912	01A1212	01A0313	01A0613	01B0312	01B0912	01B1212	01B0313	01B0613	05A0312	05A0912	05A1212	05A0313	05A0613	05B0312	05B0912	05B1212	05B0313	05B0613	07A0312	07A0912	07A1212	07A0313	07A0613		
Sample Date	3/28/2012	9/11/2012	12/11/2012	3/5/2013	6/4/2013	3/28/2012	9/11/2012	12/11/2012	3/5/2013	6/4/2013	3/28/2012	9/11/2012	12/11/2012	3/5/2013	6/4/2013	3/28/2012	9/11/2012	12/11/2012	3/5/2013	6/4/2013	3/27/2012	9/11/2012	12/12/2012	3/5/2013	6/4/2013		
Analyte	Units																										
Alkalinity	mg/l	126	138	94	257	155	148	145	161	184	156	144	51	150	65	172	119	117	124	144	123	154	133	137	156	156	
Carbon Dioxide	mg/l	201	109.8	186	210.2	176	40	33.2	62	67.5	50	79.2	59	98	78.2	126	26.8	22.6	72	51.7	46	47	31	92	78	82	
Ferrous Iron	mg/l	7.4	5.36	8.6	6.72	5.12	0.2	0.15	0.19	0.19	0.22	0	0.05	0.06	0	0.06	0.09	0.08	0.12	0.07	0.11	0.06	0.05	0.03	0	0.02	
Sulfide (S2/H2S/HS)	ug/l	6U	6U	6U	8	6U	6U	10	6U	6U	6U	6U	6U	6U	7	6U	6U	6U	8	6U	6U	6U	6U	6U	6U	9	6U
pH	pH Units	6.06	6.14	6.09	6.57	6.27	7.61	7.57	7.68	7.49	7.45	6.45	6.07	6.48	6.28	6.41	7.67	7.71	7.7	7.61	7.54	6.96	6.93	6.73	6.85	6.84	
Specific Conductivity	us/cm	444	836	400	542	488	445	445	460	385	441	423	147.1	370	146.3	456	342	376	355	309	367	465	461	459	405	457	
Dissolved Oxygen	mg/l	0.04	0.09	0.15	0.05	0.12	0.1	0.19	0.1	0.21	0.05	2.36	0.26	2.41	4.13	2.26	0.05	0.07	0.56	0.08	0.04	0.4	0.51	0.45	1	0.54	
ORP (Ag/AgCl)	mV	18.5	0	68.1	-38	-289.7	-165	-130	-102.7	-64.3	-331.2	153.6	89	138.6	227.6	-130.5	-92.3	-66.7	-29.5	-54.7	-250.6	161.1	110	169.8	272.3	-189.7	
Turbidity	NTU	4.4	1.18	2.49	0.82	1.94	0.4	0.59	1.01	0.21	0.49	0.21	0.16	0.18	0.33	0.16	0.2	1.26	0.48	0.48	0.17	0.94	0.67	0.11	0.09	0.3	
Temperature	Deg C	15.9	23.3	17.1	14.5	18.7	18.2	20.2	17.9	16	18.8	15.5	22.6	17.8	13	17.9	18.2	19.6	18.2	17.2	18.1	14.8	20.3	15.7	14.5	16.8	

Station ID	MW07B	MW07B	MW07B	MW07B	MW07B	MW08B	MW08B	MW08B	MW08B	MW08B	MW09A	MW09A	MW09A	MW09A	MW09A	MW09B	MW09B	MW09B	MW09B	MW09B	MW10A	MW10A	MW10A	MW10A	MW10A	
Sample ID	07B0312	07B0912	07B1212	07B0313	07B0613	08B0312	08B0912	08B1212	08B0313	08B0613	09A0312	09A0912	09A1212	09A0313	09A0613	09B0312	09B0912	09B1212	09B0313	09B0613	10A0312	10A0912	10A1212	10A0313	10A0613	
Sample Date	3/28/2012	9/11/2012	12/11/2012	3/5/2013	6/4/2013	3/27/2012	9/11/2012	12/12/2012	3/6/2013	6/5/2013	3/27/2012	9/12/2012	12/12/2012	3/5/2013	6/4/2013	3/28/2012	9/12/2012	12/12/2012	3/6/2013	6/4/2013	3/27/2012	9/12/2012	12/13/2012	3/6/2013	6/5/2013	
Analyte	Units																									
Alkalinity	mg/l	171	130	168	184	160	123	107	118	141	137	150	138	153	166	150	121	125	129	161	136	150.4	135	147	181	152
Carbon Dioxide	mg/l	44.2	25.8	58	126	54	23.1	21.4	52	39.8	66	25.3	30.8	56	80.8	52	28.2	20.4	42	26	43.6	56.7	52.6	78	48.9	88
Ferrous Iron	mg/l	0.08	0.26	0.13	0.18	0.15	1.27	1.67	1.78	1.7	1.34	0.63	0.42	0.32	0.34	0.32	0.19	0.22	0.32	0.2	0.11	0.06	0.09	0.05	0.04	0.02
Sulfide (S2/H2S/HS)	ug/l	6U	6U	6U	7	6U	6U	6U	6U	7	6U	47	51	59	40	25	6U	6U	6U	8	6U	6U	6U	6U	6U	6U
pH	pH Units	7.58	7.49	7.6	7.47	7.41	7.52	7.67	7.58	7.54	7.49	7.5	7.52	7.46	7.51	7.45	7.63	7.67	7.61	7.63	7.52	6.81	6.68	6.69	6.8	6.76
Specific Conductivity	us/cm	465	465	492	410	463	404	412	395	408	402	432	422	425	363	420	381	374	366	370	368	451	390	445	424	397
Dissolved Oxygen	mg/l	0.14	0.58	0.05	0.09	0.12	0.42	0.11	0.2	0.05	0.03	1.57	0.07	0.17	0.08	0.06	0.06	0.06	0.08	0.42	0.07	0.23	0.78	0.15	0.7	0.15
ORP (Ag/AgCl)	mV	-86.5	-70	-49.6	-75.2	-252.6	-157	-174.9	-161.9	-167.8	-340.5	-149.2	-187.7	-123.4	-200.4	-362.1	-108.4	-102.9	-83.2	-87.8	-336.8	175.4	10	4.4	184.6	-316.2
Turbidity	NTU	0.7	2.33	0.4	0.31	0.29	15	2.92	0.48	0.27	2.76	0.77	2.39	0.44	0.68	0.32	0.09	1.57	1.17	0.17	0.41	0.84	0.35	0.2	0.2	0.4
Temperature	Deg C	18.2	18.9	17.1	16.6	18.2	18	20.9	18.1	16.7	18.9	16.9	19.3	17.3	16.7	17.6	17.7	18.7	17.3	16.7	18.2	16	24	17.8	13.8	18.1

Station ID	MW11A	MW11A	MW11A	MW11A	MW11A	MW12A	MW12A	MW12A	MW12A	MW12A	MW15B	MW15B	MW15B	MW15B	MW15B	MW16B	MW16B	MW16B	MW16B	MW16B	
Sample ID	11A0312	11A0912	11A1212	11A0313	11A0613	12A0312	12A0912	12A1212	12A0313	12A0613	15B0312	15B0912	15B1212	15B0313	15B0613	16B0312	16B0912	16B1212	16B0313	16B0313	
Sample Date	3/27/2012	9/12/2012	12/13/2012	3/5/2013	6/5/2013	3/27/2012	9/13/2012	12/11/2012	3/6/2013	6/5/2013	3/28/2012	9/12/2012	12/13/2012	3/6/2013	6/5/2013	3/27/2012	9/13/2012	12/11/2012	3/5/2013	6/5/2013	
Analyte	Units																				
Alkalinity	mg/l	154	147	149	161	129	148	163	146	186	171	146	133	143	162	148	166	173	183	199	173
Carbon Dioxide	mg/l	80	102	122	136	143	73	87	102	84.3	126	43.2	39.3	38	31.2	79	18.6	52	44	90.1	96
Ferrous Iron	mg/l	1.62	5.68	8	5.16	4.68	0.04	0.07	0.04	0	0.02	0.22	0.54	0.59	0.56	0.42	0.2	0.25	0.21	0.2	0.12
Sulfide (S2/H2S/HS)	ug/l	326	282	290	220	169	6U	6U	6U	7	6U	6U	6U	8	6U	6U	6U	6U	8	8	8
pH	pH Units	6.46	6.48	6.36	6.48	6.4	6.65	6.59	6.43	6.62	6.51	7.57	7.55	7.51	7.51	7.44	7.54	7.5	7.5	7.45	7.39
Specific Conductivity	us/cm	466	463	488	381	448	469	496	457	491	480	495	497	494	499	495	459	462	459	399	457
Dissolved Oxygen	mg/l	0.18	0.13	0.13	0.22	0.13	0.48	0.07	0.69	0.24	0.21	0.18	0.1	0.18	0.64	0.11	0.21	0.21	0.14	0.12	0.05
ORP (Ag/AgCl)	mV	-117.4	-200	-144.4	-212.3	-398	114.8	52.2	125.3	148.6	-281.9	-150.8	-130	-113.7	-104.4	-252.5	-85.8	-84.6	-100.6	-92.6	-354.4
Turbidity	NTU	0.8	3.38	4.45	1.24	0.44	0.2	0.57	0.13	0.21	0.3	0.15	4.97	0.17	0.13	0.46	0.32	0.3	0.32	0.54	0.34
Temperature	Deg C	16.9	23.5	18.9	17.8	18.2	17.1	24.6	19.1	14.5	19.5	19.9	19.5	17	16.6	19.5	16.9	18.4	17.2	16.1	17.7

Data Qualifiers

U The analyte was not detected at or above the reporting limit.

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**Table 4 FCX Pesticide Results
March 2012 to June 2013**

Analyte	Units	Station ID Sample ID Sample Date	MW05A	MW05A	MW05A	MW05A	MW05A	MW05B	MW05B	MW05B	MW05B	MW05B	MW09A	MW09A	MW09A	MW09A	MW09A	MW09A	
			05A0312 03/28/12	05A0912 09/11/12	05A1217 12/11/12	05A0313 03/05/13	05A0613 06/04/13	05B0312 03/28/12	05B0912 09/11/12	05B1212 12/11/12	05B0313 03/05/13	05B0613 06/04/13	09A0312 03/27/12	09A0312D 03/27/12	09A0912 09/12/12	09A1212 12/12/12	09A0313 03/05/13	09A0613 06/04/13	
4,4'-DDD (p,p'-DDD)	ug/L		<FCX WASHINGTON (1993): 0.02 ug/l> <RSL TAPWATER (November 2012): 0.027 ug/l> <NC GWQS (January 2010): 0.1 ug/l>	0.041 U ^A	0.042 U ^A	0.041 U ^A	0.041 U ^A	0.040 U ^A	0.040 U ^A	0.041 U ^A	0.041 U ^A	0.041 U ^A	0.041 U ^A	0.040 U ^A	0.040 U ^A	0.042 U ^A	0.039 U ^A		
4,4'-DDE (p,p'-DDE)	ug/L		<FCX WASHINGTON (1993): 0.02 ug/l> <RSL TAPWATER (November 2012): 0.2 ug/l> <FCX WASHINGTON (1993): 0.02 ug/l>	0.020 U ^A	0.021 U ^A	0.021 U ^A	0.021 U ^A	0.020 U ^A	0.020 U ^A	0.021 U ^A	0.020 U ^A	0.020 U ^A	0.020 U ^A	0.020 U ^A	0.020 U ^A	0.021 U ^A	0.020 U ^A		
4,4'-DDT (p,p'-DDT)	ug/L		<FCX WASHINGTON (1993): 0.02 ug/l> <RSL TAPWATER (November 2012): 0.2 ug/l> <NC GWQS (January 2010): 0.1 ug/l>	0.051 U ^A	0.052 U ^A	0.051 U ^A	0.052 U ^A	0.051 U ^A	0.051 U ^A	0.050 U ^A	0.051 U ^A	0.051 U ^A	0.051 U ^A	0.051 U ^A	0.051 U ^A	0.052 U ^A	0.049 U ^A		
Aldrin	ug/L		<FCX WASHINGTON (1993): 0.01 ug/l> <RSL TAPWATER (November 2012): 0.004 ug/l>	0.020 U ^A	0.021 U ^A	0.021 U ^A	0.021 U ^A	0.020 U ^A	0.020 U ^A	0.021 U ^A	0.020 U ^A	0.020 U ^A	0.020 U ^A	0.020 U ^A	0.020 U ^A	0.021 U ^A	0.020 U ^A		
Dieldrin	ug/L		<RSL TAPWATER (November 2012): 0.0015 ug/l> <NC GWQS (January 2010): 0.002 ug/l> <FCX WASHINGTON (1993): 0.02 ug/l>	0.020 U ^A	0.021 U ^A	0.021 U ^A	0.021 U ^A	0.020 U ^A	0.020 U ^A	0.021 U ^A	0.020 U ^A	0.020 U ^A	0.072 U ^A	0.070 U ^A	0.080 U ^A	0.086 U ^A	0.067 U ^A	0.064 U ^A	
Endosulfan I (alpha)	ug/L			0.020 U	0.021 U	0.021 U	0.021 U	0.020 U	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.021 U	0.020 U		
Endosulfan II (beta)	ug/L			0.041 U	0.042 U	0.041 U	0.041 U	0.040 U	0.040 U	0.041 U	0.041 U	0.041 U	0.041 U	0.040 U	0.040 U	0.042 U	0.039 U		
Endosulfan Sulfate	ug/L			0.051 U	0.052 U	0.051 U	0.052 U	0.051 U	0.051 U	0.050 U	0.051 U	0.051 U	0.051 U	0.051 U	0.050 U	0.052 U	0.049 U		
Endrin	ug/L		<RSL MCL (November 2012): 2 ug/l> <RSL TAPWATER (November 2012): 1.7 ug/l> <FCX WASHINGTON (1993): 0.20 ug/l> <NC GWQS (January 2010): 2 ug/l>	0.041 U	0.042 U	0.041 U	0.041 U	0.040 U	0.040 U	0.040 U	0.041 U	0.041 U	0.041 U	0.040 U	0.040 U	0.042 U	0.039 U		
Endrin aldehyde	ug/L			0.051 U	0.052 U	0.051 U	0.052 U	0.051 U	0.051 U	0.050 U	0.051 U	0.051 U	0.051 U	0.051 U	0.052 U	0.049 U			
Endrin ketone	ug/L			0.051 U	0.052 U	0.051 U	0.052 U	0.051 U	0.051 U	0.050 U	0.051 U	0.051 U	0.051 U	0.051 U	0.052 U	0.049 U			
Heptachlor	ug/L		<FCX WASHINGTON (1993): 0.076 ug/l> <NC GWQS (January 2010): 0.008 ug/l> <RSL MCL (November 2012): 0.4 ug/l> <RSL TAPWATER (November 2012): 0.0018 ug/l>	0.015 U	0.016 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.016 U	0.015 U		
Heptachlor epoxide	ug/L		<RSL MCL (November 2012): 0.2 ug/l> <NC GWQS (January 2010): 0.004 ug/l> <FCX WASHINGTON (1993): 0.038 ug/l> <RSL TAPWATER (November 2012): 0.0033 ug/l>	0.020 U	0.021 U	0.021 U	0.021 U	0.020 U	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.021 U	0.020 U		
Hp-Sed	ug/L			0.00033 U ^O	0.0011 U	0.00099 U	0.00099 U ^O	0.00016 U ^O	0.00032 U ^O	0.00034 U ^O	0.00020 U ^O	0.00024 U ^O	0.00024 U ^O	0.0011 U	0.0011 U	0.00080 U ^O	0.00095 U ^O	0.00080 U ^O	0.001 U
Hx-Sed	ug/L			0.0010 U	0.0011 U	0.00099 U	0.00099 U	0.00098 U	0.00027 U ^O	0.00027 U ^O	0.0010 U	0.0010 U	0.00099 U	0.001 U	0.00098 U ^O	0.00067 U ^O	0.00082 U ^O	0.00049 U ^O	0.00057 U ^O
Methoxychlor	ug/L		<NC GWQS (January 2010): 40 ug/l> <RSL MCL (November 2012): 40 ug/l> <RSL TAPWATER (November 2012): 27 ug/l>	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.099 U	0.10 U	0.098 U		
Toxaphene	ug/L		<RSL MCL (November 2012): 3 ug/l> <RSL TAPWATER (November 2012): 0.013 ug/l> <NC GWQS (January 2010): 0.03 ug/l> <FCX WASHINGTON (1993): 1.0 ug/l>	2.0 U	2.1 U	2.1 U	2.1 U	2.0 U	2.0 U	2.0 U	2.1 U	2.0 U	2.0 U	2.0 U	2.0 U	2.1 U	2.0 U		
Toxaphene, Parlar 26	ug/L			0.0010 U	0.0011 U	0.00099 U	0.00099 U ^O	0.00098 U	0.0010 U	0.0010 U	0.0010 U	0.0010 U ^O	0.00099 U	0.0010 U	0.0010 U	0.00099 U	0.0010 U	0.0010 U ^O	0.00098 U
Toxaphene, Parlar 32	ug/L			0.0010 U	0.0011 U	0.00099 U	0.00099 U ^O	0.00098 U	0.00097 U ^O	0.0011 U	0.0010 U	0.0010 U ^O	0.00099 U	0.0010 U	0.0010 U	0.00099 U	0.0010 U	0.0010 U ^O	0.00098 U
Toxaphene, Parlar 39	ug/L			0.0010 U	0.0011 U	0.00099 U	0.00099 U ^O	0.00098 U	0.0010 U	0.0010 U	0.0010 U	0.0010 U ^O	0.00099 U	0.0010 U	0.0010 U	0.00099 U	0.0010 U	0.0010 U ^O	0.00098 U
Toxaphene, Parlar 40	ug/L			0.0010 U	0.0011 U	0.00099 U	0.00099 U	0.00098 U	0.0010 U	0.0010 U	0.0010 U	0.0010 U	0.00099 U	0.0010 U	0.0010 U	0.00099 U	0.0010 U	0.0010 U	0.00098 U
Toxaphene, Parlar 41	ug/L			0.0010 U	0.0011 U	0.00099 U	0.00099 U	0.00098 U	0.0010 U	0.0010 U	0.0010 U	0.0010 U	0.00099 U	0.0010 U	0.0010 U	0.00099 U	0.0010 U	0.0010 U	0.00098 U
Toxaphene, Parlar 44	ug/L			0.0010 U	0.0011 U	0.00099 U	0.00099 U	0.00098 U	0.0010 U	0.0010 U	0.0010 U	0.0010 U	0.00099 U	0.0010 U	0.0010 U	0.00099 U	0.0010 U	0.0010 U	0.00098 U
Toxaphene, Parlar 50	ug/L			0.0010 U ^O	0.0011 U	0.00099 U	0.00099 U	0.00098 U	0.0010 U ^O	0.0010 U	0.0010 U	0.0010 U	0.00099 U	0.0010 U ^O	0.0010 U ^O	0.00099 U	0.0010 U	0.0010 U	0.00098 U
Toxaphene, Parlar 62	ug/L			0.0051 U	0.0053 U	0.0050 U	0.0049 U	0.0049 U	0.0052 U	0.0052 U	0.0052 U	0.0050 U	0.0050 U	0.0051 U	0.0050 U	0.0050 U	0.0051 U	0.0050 U	0.0049 U
alpha-BHC	ug/L		<FCX WASHINGTON (1993): 0.014 ug/l> <RSL TAPWATER (November 2012): 0.0062 ug/l>	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.0099 U	0.010 U	0.010 U	0.0098 U	
alpha-Chlordane	ug/L			0.020 U	0.021 U	0.021 U	0.021 U	0.020 U	0.020 U	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U	0.021 U	0.020 U	0.020 U	
beta-BHC	ug/L		<FCX WASHINGTON (1993): 0.047 ug/l> <RSL TAPWATER (November 2012): 0.022 ug/l>	0.020 U	0.021 U	0.021 U	0.021 U	0.020 U	0.020 U	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U	0.021 U	0.020 U	0.020 U	
delta-BHC	ug/L			0.020 U	0.021 U	0.021 U	0.021 U	0.020 U	0.020 U	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U	0.021 U	0.020 U	0.020 U	
gamma-BHC (Lindane)	ug/L		<RSL MCL (November 2012): 0.2 ug/l> <NC GWQS (January 2010): 0.03 ug/l> <FCX WASHINGTON (1993): 0.0265 ug/l> <RSL TAPWATER (November 2012): 0.036 ug/l>	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.0099 U	0.010 U	0.010 U	0.0098 U	
gamma-Chlordane	ug/L			0.020 U	0.021 U	0.021 U	0.021 U	0.020 U	0.020 U	0.020 U	0.021 U	0.020 U	0.020 U	0.020 U	0.020 U	0.021 U	0.020 U	0.020 U	

Legend	
Detection, Result Shown	S, O
Non-detect, MRL shown	S, O U
Result exceeds standard, Result shown	S, O ^A
Non-detect, MRL exceeds standard, MRL shown	S, O U ^A

Data Qualifiers	
U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
O	Other qualifier, see analytical data sheet.

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Table 4 FCX Pesticide Results
March 2012 to June 2013

Analyte	Units	Comparison Standard	Station ID	MW10A	MW10A	MW10A	MW10A	MW10A	MW11A	MW11A	MW11A	MW11A	MW11A	MW11A	MW11A	MW12A	MW12A	MW12A	MW12A	MW12A	MW12A
			Sample ID	10A0312	10A0912	10A1212	10A0313	10A0613	11A0312	11A0912	11A1212	11A0313	11A0613	11A0613	11A0613	11A0613	12A0312	12A0912	12A0912	12A1212	12A0313
			Sample Date	03/27/12	09/12/12	12/13/12	03/06/13	06/05/13	03/27/12	09/12/12	12/13/12	03/05/13	06/05/13	06/05/13	03/27/12	09/13/12	09/13/12	12/13/12	03/06/13	06/05/13	
4,4'-DDD (p,p'-DDD)	ug/L	<FCX WASHINGTON (1993): 0.02 ug/l > <RSL TAPWATER (November 2012): 0.027 ug/l > <NC GWQS (January 2010): 0.1 ug/l >		0.040 U ^A	0.040 U ^A	0.042 U ^A	0.041 U ^A	0.039 U ^A	0.42 ^A	0.54 ^A	0.72 ^A	0.49 ^A	0.46 ^A	0.56 ^A	0.040 U ^A	0.040 U ^A	0.040 U ^A	0.041 U ^A	0.040 U ^A	0.041 U ^A	
4,4'-DDE (p,p'-DDE)	ug/L	<FCX WASHINGTON (1993): 0.02 ug/l > <RSL TAPWATER (November 2012): 0.2 ug/l >		0.020 U ^A	0.020 U ^A	0.021 U ^A	0.021 U ^A	0.020 U ^A	0.020 U ^A	0.10 U ^A	0.10 U ^A	0.020 U ^A	0.10 U ^A	0.10 U ^A	0.020 U ^A	0.020 U ^A	0.020 U ^A	0.020 U ^A	0.020 U ^A	0.020 U ^A	
4,4'-DDT (p,p'-DDT)	ug/L	<FCX WASHINGTON (1993): 0.02 ug/l > <RSL TAPWATER (November 2012): 0.2 ug/l > <NC GWQS (January 2010): 0.1 ug/l >		0.050 U ^A	0.050 U ^A	0.053 U ^A	0.051 U ^A	0.049 U ^A	0.050 U ^A	0.25 U ^A	0.26 U ^A	0.050 U ^A	0.25 U ^A	0.26 U ^A	0.050 U ^A	0.050 U ^A	0.051 U ^A	0.051 U ^A	0.050 U ^A	0.051 U ^A	
Aldrin	ug/L	<FCX WASHINGTON (1993): 0.01 ug/l > <RSL TAPWATER (November 2012): 0.004 ug/l >		0.040 ^A	0.020 ^A	0.039 ^A	0.032 ^A	0.031 ^A	1.8 ^A	2.0 ^A	2.2 ^A	2.0 ^A	2 ^A	2.3 ^A	0.020 U ^A	0.020 U ^A	0.020 U ^A	0.020 U ^A	0.020 U ^A	0.020 U ^A	
Dieldrin	ug/L	<RSL TAPWATER (November 2012): 0.0015 ug/l > <NC GWQS (January 2010): 0.002 ug/l > <FCX WASHINGTON (1993): 0.02 ug/l >		0.60 ^A	0.51 ^A	0.62 ^A	0.57 ^A	0.41 J,O ^A	0.020 U ^A	0.10 U ^A	0.10 U ^A	0.020 U ^A	0.10 U ^A	0.10 U ^A	0.037 ^A	0.047 J,O ^A	0.047 J,O ^A	0.049 ^A	0.055 ^A	0.054 J,O ^A	
Endosulfan I (alpha)	ug/L			0.020 U	0.020 U	0.021 U	0.021 U	0.020 U	0.020 U	0.10 U	0.10 U	0.020 U	0.10 U	0.10 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	
Endosulfan II (beta)	ug/L			0.040 U	0.050 U,O	0.042 U	0.041 U	0.039 U	0.040 U	0.20 U	0.20 U	0.040 U	0.20 U	0.20 U	0.040 U	0.040 U	0.040 U	0.041 U	0.079	0.081	
Endosulfan Sulfate	ug/L			0.050 U	0.050 U	0.053 U	0.051 U	0.049 U	0.050 U	0.25 U	0.26 U	0.050 U	0.25 U	0.26 U	0.050 U	0.050 U	0.051 U	0.051 U	0.050 U	0.051 U	
Endrin	ug/L	<RSL MCL (November 2012): 2 ug/l > <RSL TAPWATER (November 2012): 1.7 ug/l > <FCX WASHINGTON (1993): 0.20 ug/l > <NC GWQS (January 2010): 2 ug/l >		0.060	0.066	0.047 J,O	0.06	0.058	0.040 U	0.20 U	0.20 U	0.040 U	0.20 U	0.20 U	0.046 U	0.061 U	0.066 U	0.058 U,O	0.062 J,O	0.086	
Endrin aldehyde	ug/L			0.050 U	0.050 U	0.053 U	0.051 U	0.071 U	0.050 U	0.25 U	0.26 U	0.050 U	0.25 U	0.26 U	0.050 U	0.050 U	0.051 U	0.051 U	0.050 U	0.051 U	
Endrin ketone	ug/L			0.051	0.096	0.053 U	0.051 U	0.049 U	0.050 U	0.25 U	0.26 U	0.050 U	0.25 U	0.26 U	0.062	0.050 U	0.051	0.087	0.095	0.11	
Heptachlor	ug/L	<FCX WASHINGTON (1993): 0.076 ug/l > <NC GWQS (January 2010): 0.008 ug/l > <RSL MCL (November 2012): 0.4 ug/l > <RSL TAPWATER (November 2012): 0.0018 ug/l >		0.015 U	0.015 U	0.016 U	0.015 U	0.015 U	0.015 U	0.075 U	0.077 U ^A	0.015 U	0.076 U ^A	0.077 U ^A	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	
Heptachlor epoxide	ug/L	<RSL MCL (November 2012): 0.2 ug/l > <NC GWQS (January 2010): 0.004 ug/l > <FCX WASHINGTON (1993): 0.038 ug/l > <RSL TAPWATER (November 2012): 0.0033 ug/l >		0.020 U	0.066 ^A	0.093 ^A	0.08 ^A	0.041 ^A	0.020 U	0.10 U	0.10 U	0.020 U	0.10 U	0.10 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	
Hp-Sed	ug/L			0.0008	0.0051	0.0052	0.0051 J,O	0.0076	0.083	0.028	0.023	0.014 J,O	0.025	0.022	0.0058	0.0054	0.0049	0.0059	0.0056 J,O	0.0067	
Hx-Sed	ug/L			0.0032	0.0022	0.0021	0.002	0.0026	0.0029	0.0019	0.0019	0.0017	0.0024	0.0023	0.0049	0.0058	0.0053	0.0056	0.0056	0.006	
Methoxychlor	ug/L	<NC GWQS (January 2010): 40 ug/l > <RSL MCL (November 2012): 40 ug/l > <RSL TAPWATER (November 2012): 27 ug/l > <RSL MCL (November 2012): 3 ug/l >		0.099 U	0.10 U	0.11 U	0.10 U	0.098 U	0.10 U	0.50 U	0.51 U	0.10 U	0.51 U	0.51 U	0.10 U	0.099 U	0.10 U	0.10 U	0.10 U	0.10 U	
Toxaphene	ug/L	<RSL TAPWATER (November 2012): 0.013 ug/l > <NC GWQS (January 2010): 0.03 ug/l > <FCX WASHINGTON (1993): 1.0 ug/l >		2.0 U	2.0 U	2.1 U	2.1 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	3.4 U,O ^A	2.0 U	3.3 U,O ^A	
Toxaphene, Parlar 26	ug/L			0.0025	0.0027	0.0025	0.0020 J,O	0.0029	0.0010 U	0.00099 U	0.0010 U	0.0010 J,O	0.0010 U	0.0010 U	0.0010 J,O	0.00096 J,O	0.00084 J,O	0.0012	0.0011 J,O	0.001	
Toxaphene, Parlar 32	ug/L			0.032	0.023	0.025	0.021 J,O	0.033	0.0010 U	0.00099 U	0.0010 U	0.0010 J,O	0.0010 U	0.0010 U	0.0010 U	0.0010 U	0.0010 U	0.0010 U	0.0010 J,O	0.0016	
Toxaphene, Parlar 39	ug/L			0.0029	0.0032	0.0027	0.0025 J,O	0.004	0.0010 U	0.00099 U	0.0010 U	0.0010 J,O	0.0010 U	0.0010 U	0.0010 U	0.00098 U	0.0010 U	0.00098 U	0.0010 J,O	0.00099 U	
Toxaphene, Parlar 40	ug/L			0.0049	0.0046	0.0043	0.0038	0.0055	0.0010 U	0.00099 U	0.0010 U	0.0010 U	0.0010 U	0.0010 U	0.0018	0.0016	0.0015	0.0016	0.0016	0.0017	
Toxaphene, Parlar 41	ug/L			0.0028	0.002	0.002	0.002	0.0022	0.0010 U	0.00099 U	0.0010 U	0.0010 U	0.0010 U	0.0010 U	0.0012	0.0011	0.001	0.0011	0.001	0.001	
Toxaphene, Parlar 44	ug/L			0.0014	0.0014	0.0014	0.0012	0.0027	0.0010 U	0.041 U,O	0.044 U,O	0.035 U,O	0.069 U,O	0.066 U,O	0.0010 U	0.00098 U	0.0010 U	0.00098 U	0.0010 U	0.00087 J,O	
Toxaphene, Parlar 50	ug/L			0.0039 J,O	0.0034	0.0033	0.0028	0.004	0.0010 J,O	0.00099 U	0.0010 U	0.0010 U	0.0010 U	0.0010 U	0.00095 J,O	0.00088 J,O	0.00080 J,O	0.00090 J,O	0.00073 J,O	0.00087 J,O	
Toxaphene, Parlar 62	ug/L			0.0054	0.0064	0.0079	0.0073	0.0094	0.0050 U	0.0050 U	0.0051 U	0.0051 U	0.0051 U	0.0050 U	0.0051 U	0.0049 U	0.0052 U	0.0049 U	0.0051 U	0.0049 U	
alpha-BHC	ug/L	<FCX WASHINGTON (1993): 0.014 ug/l > <RSL TAPWATER (November 2012): 0.0062 ug/l >		0.017 O ^A	0.014 J,O ^A	0.011 J,O	0.013 J,O	0.0098 U	0.010 U	0.050 U ^A	0.051 U ^A	0.010 U	0.051 U ^A	0.051 U ^A	0.010 U	0.0099 U	0.010 U	0.010 U	0.010 U	0.010 U	
alpha-Chlordane	ug/L			0.1	0.09	0.12	0.091	0.089	0.020 U	0.10 U	0.10 U	0.020 U	0.10 U	0.10 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	
beta-BHC	ug/L	<FCX WASHINGTON (1993): 0.047 ug/l > <RSL TAPWATER (November 2012): 0.022 ug/l >		0.073 ^A	0.11 ^A	0.033	0.049 ^A	0.026 ^A	0.020 U	0.10 U ^A	0.10 U ^A	0.020 U	0.10 U ^A	0.10 U ^A	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	
delta-BHC	ug/L			0.028	0.029	0.021 U	0.021 U	0.020 U	0.020 U	0.10 U	0.10 U	0.020 U	0.10 U	0.10 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	
gamma-BHC (Lindane)	ug/L	<RSL MCL (November 2012): 0.2 ug/l > <NC GWQS (January 2010): 0.03 ug/l > <FCX WASHINGTON (1993): 0.0265 ug/l > <RSL TAPWATER (November 2012): 0.036 ug/l >		0.059 ^A	0.027 ^A	0.031 ^A	0.026 ^A	0.022 ^A	0.010 U	0.050 U	0.051 U	0.010 U	0.051 U	0.051 U	0.010 U	0.0099 U	0.010 U	0.010 U	0.010 U	0.010 U	
gamma-Chlordane	ug/L			0.16	0.16	0.21	0.15	0.15	0.020 U	0.10 U	0.10 U	0.020 U	0.10 U	0.10 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	

Legend	
Detection, Result Shown	5.0
Non-detect, MRL shown	5.0 U
Result exceeds standard, Result shown	5.0 ^A
Non-detect, MRL exceeds standard, MRL shown	5.0 U ^A

Data Qualifiers	
U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
O	Other qualifier, see analytical data sheet.

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**Table 5
FCX VOC MNA Results
March 2012 to June 2013**

Station ID	MW01A	MW01A	MW01A	MW01A	MW01A	MW01B	MW01B	MW01B	MW01B	MW01B	MW05A	MW05A	MW05A	MW05A	MW05A	MW05B	MW05B	MW05B	MW05B	MW05B	
Sample ID	01A0312	01A0912	01A1212	01A0313	01A0613	01B0312	01B0912	01B1212	01B0313	01B0613	05A0312	05A0912	05A1212	05A0313	05A0613	05B0312	05B0912	05B1212	05B0313	05B0613	
Sample Date	03/28/12	09/11/12	12/11/12	03/05/13	06/04/13	03/28/12	09/11/12	12/11/12	03/05/13	06/04/13	03/28/12	09/11/12	12/11/12	03/05/13	06/04/13	03/28/12	09/11/12	12/11/12	03/05/13	06/04/13	
Analyte	Units																				
Ethane	ug/L	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
Ethene	ug/L	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
Methane	ug/L	54	56	80	20	26	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	2.9	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U

Station ID	MW07A	MW07A	MW07A	MW07A	MW07A	MW07B	MW07B	MW07B	MW07B	MW07B	MW08B	MW08B	MW08B	MW08B	MW08B	MW09A	MW09A	MW09A	MW09A	MW09A	MW09A
Sample ID	07A0312	07A0912	07A1212	07A0313	07A0613	07B0312	07B0912	07B1212	07B0313	07B0613	08B0312	08B0912	08B1212	08B0313	MW08B0613	09A0312	09A0312D	09A0912	09A1212	09A0313	MW09A0613
Sample Date	03/27/12	09/11/12	12/12/12	03/05/13	06/04/13	03/28/12	09/11/12	12/11/12	03/05/13	06/04/13	03/27/12	09/11/12	12/12/12	03/06/13	06/05/13	03/27/12	03/27/12	09/12/12	12/12/12	03/05/13	06/04/13
Analyte	Units																				
Ethane	ug/L	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
Ethene	ug/L	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
Methane	ug/L	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	11	10	10	9	5.8	5.7

Station ID	MW09B	MW09B	MW09B	MW09B	MW09B	MW10A	MW10A	MW10A	MW10A	MW10A	MW11A	MW11A	MW11A	MW11A	MW11A	MW12A	MW12A	MW12A	MW12A	MW12A	MW12A
Sample ID	09B0312	09B0912	09B1212	09B0313	09B0613	10A0312	10A0313	10A0912	10A1212	10A0613	11A0312	11A0912	11A1212	11A0313	11A0613	12A0312	12A0912	12A0912D	12A1212	12A0313	12A0613
Sample Date	03/28/12	09/12/12	12/12/12	03/06/13	06/04/13	03/27/12	03/06/13	09/12/12	12/13/12	06/05/13	03/27/12	09/12/12	12/13/12	03/05/13	06/05/13	03/27/12	09/13/12	09/13/12	12/11/12	03/06/13	06/05/13
Analyte	Units																				
Ethane	ug/L	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
Ethene	ug/L	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
Methane	ug/L	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.5	1.4 U	2.1 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	6.3	4.7	1.4 U	3.4	1.4 U

Station ID	MW15B	MW15B	MW15B	MW15B	MW15B	MW15B	MW16B	MW16B	MW16B	MW16B	MW16B	MW16B
Sample ID	15B0312	15B0912	15B1212	15B01212	15B0313	15B0613	16B0312	16B0912	16B1212	16B0313	16B0313	16B0613
Sample Date	03/28/12	09/12/12	12/13/12	12/13/12	03/06/13	06/05/13	03/27/12	09/13/12	12/11/12	03/05/13	03/05/13	06/05/13
Analyte	Units											
Ethane	ug/L	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
Ethene	ug/L	2.6 U	3.6	3.1 U	3.0 U	2.8	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
Methane	ug/L	3	3.5	3.1 U	3.2 U	3.3	2.4	5.7	4.9	5.3	5.5	6.6

Data Qualifiers

U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
O	Other qualifier, see analytical data sheet.
.	Detect, result shown

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**Table 6 FCX VOC Results
March 2012 to June 2013**

Station ID Sample ID Sample Date		MW01A 01A0312 03/28/12	MW01A 01A0912 09/11/12	MW01A 01A1212 12/11/12	MW01A 01A0313 03/05/13	MW01A 01A0613 06/04/13	MW07A 07A0312 03/27/12	MW07A 07A0912 09/11/12	MW07A 07A1212 12/12/12	MW07A 07A0313 03/05/13	MW07A 07A0613 06/04/13	MW11A 11A0312 03/27/12	MW11A 11A0912 09/12/12	MW11A 11A1212 12/13/12	MW11A 11A0313 03/05/13	MW11A 11A0613 06/05/13	MW11A 11A0613 06/05/13
Analyte	Units	Comparison Standard															
1,1-Dichloroethane	ug/L	<NC GWQS (January 2010): 6 ug/l > <RSL TAPWATER (November 2012): 2.4 ug/l >															
1,1-Dichloroethene (1,1-Dichloroethylene)	ug/L	0.50 U	0.50 U	0.50 U	0.34 J	<0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	<0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	<0.50 U	<0.50 U
1,2-Dichloroethane	ug/L	<FCX WASHINGTON (1993): 0.38 ug/l > <RSL TAPWATER (November 2012): 0.15 ug/l > <RSL MCL (November 2012): 5 ug/l > <NC GWQS (January 2010): 0.4 ug/l > <RSL MCL (November 2012): 5 ug/l >															
1,2-Dichloropropane	ug/L	0.50 U	0.50 U	0.50 U	0.50 U	<0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	<0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	<0.50 U	<0.50 U
Benzene	ug/L	<FCX WASHINGTON (1993): 1 ug/l > <NC GWQS (January 2010): 1 ug/l > <RSL MCL (November 2012): 5 ug/l > <RSL TAPWATER (November 2012): 0.39 ug/l >															
Chlorobenzene	ug/L	0.50 U	0.50 U	0.50 U	0.50 U	<0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	<0.50 U	0.38 J	0.5	0.44 J	0.34 J	0.39 J	0.34 J
Methyl T-Butyl Ether (MTBE)	ug/L	<RSL TAPWATER (November 2012): 12 ug/l > <NC GWQS (January 2010): 20 ug/l >															

Station ID Sample ID Sample Date		MW15B 15B0312 03/28/12	MW15B 15B0912 09/12/12	MW15B 15B1212 12/13/12	MW15B 15B01212 12/13/12	MW15B 15B0313 03/06/13	MW15B 15B0613 06/05/13	MW16B 16B0312 03/27/12	MW16B 16B0313 03/05/13	MW16B 16B0912 09/13/12	MW16B 16B1212 12/13/12	MW16B 16B0313 03/05/13	MW16B 16B0613 06/05/13
Analyte	Units	Comparison Standard											
1,1-Dichloroethane	ug/L	<NC GWQS (January 2010): 6 ug/l > <RSL TAPWATER (November 2012): 2.4 ug/l >											
1,1-Dichloroethene (1,1-Dichloroethylene)	ug/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	<0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	<0.50 U
1,2-Dichloroethane	ug/L	<FCX WASHINGTON (1993): 0.38 ug/l > <RSL TAPWATER (November 2012): 0.15 ug/l > <RSL MCL (November 2012): 5 ug/l > <NC GWQS (January 2010): 0.4 ug/l > <RSL MCL (November 2012): 5 ug/l >											
1,2-Dichloropropane	ug/L	0.22 J	0.22 J	0.22 J	0.22 J	0.22 J	0.74 J	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	<0.50 U
Benzene	ug/L	<FCX WASHINGTON (1993): 1 ug/l > <NC GWQS (January 2010): 1 ug/l > <RSL MCL (November 2012): 5 ug/l > <RSL TAPWATER (November 2012): 0.39 ug/l >											
Chlorobenzene	ug/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	<0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	<0.50 U
Methyl T-Butyl Ether (MTBE)	ug/L	<RSL TAPWATER (November 2012): 12 ug/l > <NC GWQS (January 2010): 20 ug/l >											

Data Qualifiers

U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
O	Other qualifier, see analytical data sheet.

Legend

Detection, Result Shown	5.0
Non-detect, MRL shown	5.0 U
Result exceeds standard, Result shown	5.0 ^
Non-detect, MRL exceeds standard, MRL shown	5.0 U ^

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**Table 7
FCX CNA Results
March 2012 to June 2013**

Station ID	MW01A	MW01A	MW01A	MW01A	MW01A	MW01B	MW01B	MW01B	MW01B	MW01B	MW05A	MW05A	MW05A	MW05A	MW05A	MW05B	MW05B	MW05B	MW05B	MW05B	MW05B	MW07A	MW07A	MW07A	MW07A	MW07A
Sample ID	01A0312	01A0912	01A1212	01A0313	01A0613	01B0312	01B0912	01B1212	01B0313	01B0613	05A0312	05A0912	05A1212	05A0313	05A0613	05B0312	05B0912	05B1212	05B0313	05B0613	07A0312	07A0313	07A0912	07A1212	07A0613	
Sample Date	03/28/12	09/11/12	12/11/12	03/05/13	06/04/13	03/28/12	09/11/12	12/11/12	03/05/13	06/04/13	03/28/12	09/11/12	12/11/12	03/05/13	06/04/13	03/28/12	09/11/12	12/11/12	03/05/13	06/04/13	03/27/12	03/05/13	09/11/12	12/12/12	06/04/13	
Analyte	Units																									
Chloride	mg/L	38	36	34	37	33	12	11	12	12	12	9.4	1.6	3.2	2.3	6.6	17	17	17	17	17	24	25	23	24	21
Nitrate/Nitrite as N	mg/L	0.050 U	0.050 U	0.050 U	0.050 U	<0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	<0.050 U	0.23	0.050 U	0.19	0.19	0.13	0.18	0.41	0.19	0.23	0.15	0.51	2.9	1.6	0.28	1.5
Sulfate as SO4	mg/L	41	36	34	41	40	51	47	47	49	49	57	11	29	18	49	29	29	28	30	34	43	43	37	39	45
Total Organic Carbon	mg/L	15	12	11	9.5	6.6	6.5	4.5	4.5	3.2	2.8	9.1	3.9	7.4	2.2	5.9	4.4	3.6	3.7	3	2.4	7.1	4.2	5	5	3.1

Station ID	MW07B	MW07B	MW07B	MW07B	MW07B	MW08B	MW08B	MW08B	MW08B	MW08B	MW09A	MW09A	MW09A	MW09A	MW09A	MW09A	MW09B	MW09B	MW09B	MW09B	MW09B	MW10A	MW10A	MW10A	MW10A	MW10A	
Sample ID	07B012	07B0312	07B0313	07B1212	07B0613	08B0312	08B0313	08B0912	08B1212	08B0613	09A0312	09A0312D	09A0313	09A0912	09A1212	09A0613	09B0312	09B0313	09B0912	09B1212	09B0613	10A0312	10A0313	10A0912	10A1212	10A0613	
Sample Date	09/11/12	03/28/12	03/05/13	12/11/12	06/04/13	03/27/12	03/06/13	09/11/12	12/12/12	06/05/13	03/27/12	03/27/12	03/05/13	09/12/12	12/12/12	06/04/13	03/28/12	03/06/13	09/12/12	12/12/12	06/04/13	03/27/12	03/06/13	09/12/12	12/13/12	06/05/13	
Analyte	Units																										
Chloride	mg/L	19	21	19	18	19	26	24	24	23	23	19	19	19	18	18	19	16	16	15	15	16	11	6.9	7.7	10	9.1 U
Nitrate/Nitrite as N	mg/L	0.050 U	0.050 U	0.050 U	0.050 U	<0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	<0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	<0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	<0.050 U	1.7	1.2	1.6	0.64	1.0 U
Sulfate as SO4	mg/L	44	48	46	45	47	43	41	40	39	42	38	38	37	35	35	40	34	28	29	27	29	43	32	30	34	34 U
Total Organic Carbon	mg/L	4.1	6.2	3.4	4.4	3.2	4.5	3.3	3.6	3.8	3	5.2	5.8	3	3.9	4.1	3.6	4.6	2.6	3.4	4.5	3.1	7.2	4.9	6.2	5.5	4.0 U

Station ID	MW11A	MW11A	MW11A	MW11A	MW11A	MW11A	MW12A	MW12A	MW12A	MW12A	MW12A	MW12A	MW12A	MW12A	MW12A	MW12A	MW12A	MW12A	MW12A	MW12A	MW12A	MW12A	MW12A	MW12A	MW12A	MW12A	
Sample ID	11A0312	11A0313	11A0912	11A1212	11A0613	11A0613	12A0312	12A0313	12A0912	12A0912D	12A1212	12A0613	15B0312	15B0313	15B0912	15B1212	15B01212	15B0613	16B0312	16B1212	16B0313	16B0313	16B0912	16B0613	16B0912	16B0613	16B0613
Sample Date	03/27/12	03/05/13	09/12/12	12/13/12	06/05/13	06/05/13	03/27/12	03/06/13	09/13/12	09/13/12	12/11/12	06/05/13	03/28/12	03/06/13	09/12/12	12/13/12	12/13/12	06/05/13	03/27/12	12/11/12	03/05/13	03/05/13	09/13/12	06/05/13	09/13/12	06/05/13	
Analyte	Units																										
Chloride	mg/L	17	16	15	17	15	15	16	14	15	15	14	15	7.5	7.4	7.2	7.2	7.2	7.2	21	21	21	21	20	21		
Nitrate/Nitrite as N	mg/L	0.050 U	0.069	0.058	0.051	0.068	<0.050 U	3.1	3.7	3.3	3.4	0.37	2.9	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	<0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	<0.050 U		
Sulfate as SO4	mg/L	57	59	56	53	67	66	46	48	46	46	48	55	110	99	97	95	95	100	31	28	29	29	28	30		
Total Organic Carbon	mg/L	10	5.2	7.2	6.8	6.2	6	7.7	5.2	7.3	6.7	6.4	4.6	7	3.7	4.8	4.7	5	4.2	6.6	5	3.6	4	4.9	3.7		

Data Qualifiers

- U The analyte was not detected at or above the reporting limit.
- O Other qualifiers have been assigned providing additional information. These explanatory qualifiers are included in the printable pdf report and in other columns in the export files.

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**Table 8
FCX Soil Pesticide Results
June 2013**

			Station ID	FCX03	FCX04	FCX05
			Sample ID	FCX030613	FCX040613	FCX050613
			Sample Date	6/5/2013 17:22	6/5/2013 16:30	6/5/2013 15:52
Analyte	Units	Comparison Standard				
4,4'-DDD (p,p'-DDD)	ug/kg dry	<RSL RES SOIL (November 2012): 2 mg/kg >	5.1	18	340	
4,4'-DDE (p,p'-DDE)	ug/kg dry	<RSL RES SOIL (November 2012): 1.4 mg/kg >	4.6	55	850	
4,4'-DDT (p,p'-DDT)	ug/kg dry	<RSL RES SOIL (November 2012): 1.7 mg/kg >	28	19	17000 [^]	
Aldrin	ug/kg dry	<RSL RES SOIL (November 2012): 0.029 mg/kg >	0.93 U	4.5 U	87 U [^]	
Dieldrin	ug/kg dry	<RSL RES SOIL (November 2012): 0.03 mg/kg >	0.93 U	12	87 U [^]	
Endosulfan I (alpha)	ug/kg dry		0.93 U	4.5 U	87 U	
Endosulfan II (beta)	ug/kg dry		1.9 U	8.9 U	170 U	
Endosulfan Sulfate	ug/kg dry		2.3 U	11 U	220 U	
Endrin	ug/kg dry	<RSL RES SOIL (November 2012): 18 mg/kg >	1.9 U	11	170 U	
Endrin aldehyde	ug/kg dry		2.3 U	11 U	220 U	
Endrin ketone	ug/kg dry		2.3 U	11 U	220 U	
Heptachlor	ug/kg dry	<RSL RES SOIL (November 2012): 0.11 mg/kg >	0.70 U	3.3 U	65 U	
Heptachlor epoxide	ug/kg dry	<RSL RES SOIL (November 2012): 0.053 mg/kg >	0.93 U	4.5 U	87 U [^]	
Methoxychlor	ug/kg dry	<RSL RES SOIL (November 2012): 310 mg/kg >	4.6 U	22 U	430 U	
Toxaphene	ug/kg dry	<RSL RES SOIL (November 2012): 0.44 mg/kg >	93 U	450 U [^]	8700 U [^]	
alpha-BHC	ug/kg dry	<RSL RES SOIL (November 2012): 0.077 mg/kg >	0.46 U	2.2 U	43 U	
alpha-Chlordane	ug/kg dry		1.4 U,O	6.8 J,O	87 U	
beta-BHC	ug/kg dry	<RSL RES SOIL (November 2012): 0.27 mg/kg >	0.93 U	4.5 U	87 U	
delta-BHC	ug/kg dry		0.93 U	5.8 U,O	87 U	
gamma-BHC (Lindane)	ug/kg dry	<RSL RES SOIL (November 2012): 0.52 mg/kg >	0.71 U,O	2.2 U	43 U	
gamma-Chlordane	ug/kg dry		1.9	5.3 J,O	130 J,O	

ANALYTICAL DATA QUALIFIERS

U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
O	Other qualifiers have been assigned providing additional information. These explanatory qualifiers are included in the printable pdf report and in other columns in the export files.

Legend

Detection, Result Shown	5.0
Non-detect, MRL shown	5.0 U
Result exceeds standard, Result shown	5.0 [^]
Non-detect, MRL exceeds standard, MRL shown	5.0 U [^]

**Table 9
FCX Soil SVOC Results
June 2013**

		Station ID	FCX03	FCX04	FCX05
		Sample ID	FCX030613	FCX040613	FCX050613
		Sample Date	6/5/2013 17:22	6/5/2013 16:30	6/5/2013 15:52
Analyte	Units	Comparison Standard			
(3-and/or 4-)Methylphenol	ug/kg dry	<RSL RES SOIL (November 2012): 6100 mg/kg >	380 U	370 U	360 U
1,1-Biphenyl	ug/kg dry	<RSL RES SOIL (November 2012): 51 mg/kg >	38 U	37 U	36 U
1-Methylnaphthalene	ug/kg dry	<RSL RES SOIL (November 2012): 16 mg/kg >	38 U	37 U	36 U
2,3,4,6-Tetrachlorophenol	ug/kg dry	<RSL RES SOIL (November 2012): 1800 mg/kg >	380 U	370 U	360 U
2,4,5-Trichlorophenol	ug/kg dry	<RSL RES SOIL (November 2012): 6100 mg/kg >	380 U	370 U	360 U
2,4,6-Trichlorophenol	ug/kg dry	<RSL RES SOIL (November 2012): 44 mg/kg >	380 U	370 U	360 U
2,4-Dichlorophenol	ug/kg dry	<RSL RES SOIL (November 2012): 180 mg/kg >	380 U	370 U	360 U
2,4-Dimethylphenol	ug/kg dry	<RSL RES SOIL (November 2012): 1200 mg/kg >	380 U	370 U	360 U
2,4-Dinitrophenol	ug/kg dry	<RSL RES SOIL (November 2012): 120 mg/kg >	380 U	370 U	360 U
2,4-Dinitrotoluene	ug/kg dry	<RSL RES SOIL (November 2012): 1.6 mg/kg >	380 U	370 U	360 U
2,6-Dinitrotoluene	ug/kg dry	<RSL RES SOIL (November 2012): 61 mg/kg >	380 U	370 U	360 U
2-Chloronaphthalene	ug/kg dry	<RSL RES SOIL (November 2012): 6300 mg/kg >	380 U	370 U	360 U
2-Chlorophenol	ug/kg dry	<RSL RES SOIL (November 2012): 390 mg/kg >	380 U	370 U	360 U
2-Methyl-4,6-dinitrophenol	ug/kg dry	<RSL RES SOIL (November 2012): 4.9 mg/kg >	380 U	370 U	360 U
2-Methylnaphthalene	ug/kg dry	<RSL RES SOIL (November 2012): 230 mg/kg >	38 U	37 U	36 U
2-Methylphenol	ug/kg dry	<RSL RES SOIL (November 2012): 3100 mg/kg >	380 U	370 U	360 U
2-Nitroaniline	ug/kg dry	<RSL RES SOIL (November 2012): 610 mg/kg >	380 U	370 U	360 U
2-Nitrophenol	ug/kg dry		380 U	370 U	360 U
3,3'-Dichlorobenzidine	ug/kg dry	<RSL RES SOIL (November 2012): 1.1 mg/kg >	380 U,R,O	370 U	360 U
3-Nitroaniline	ug/kg dry		380 U	370 U	360 U
4-Bromophenyl phenyl ether	ug/kg dry		380 U	370 U	360 U
4-Chloro-3-methylphenol	ug/kg dry	<RSL RES SOIL (November 2012): 6100 mg/kg >	380 U	370 U	360 U
4-Chloroaniline	ug/kg dry	<RSL RES SOIL (November 2012): 2.4 mg/kg >	380 U,R,O	370 U	360 U
4-Chlorophenyl phenyl ether	ug/kg dry		380 U	370 U	360 U
4-Nitroaniline	ug/kg dry	<RSL RES SOIL (November 2012): 24 mg/kg >	380 U	370 U	360 U
4-Nitrophenol	ug/kg dry		380 U	370 U	360 U
Acenaphthene	ug/kg dry	<RSL RES SOIL (November 2012): 3400 mg/kg >	38 U	37 U	36 U
Acenaphthylene	ug/kg dry		38 U	37 U	36 U
Acetophenone	ug/kg dry	<RSL RES SOIL (November 2012): 7800 mg/kg >	380 U	370 U	360 U
Anthracene	ug/kg dry	<RSL RES SOIL (November 2012): 17000 mg/kg >	38 U	37 U	36 U
Atrazine	ug/kg dry	<RSL RES SOIL (November 2012): 2.1 mg/kg >	380 U	370 U	360 U
Benzaldehyde	ug/kg dry	<RSL RES SOIL (November 2012): 7800 mg/kg >	380 U,I,O	370 U	360 U
Benzo(a)anthracene	ug/kg dry	<RSL RES SOIL (November 2012): 0.15 mg/kg >	38 U	37 U	36 U
Benzo(a)pyrene	ug/kg dry	<RSL RES SOIL (November 2012): 0.015 mg/kg >	38 U ^	37 U ^	36 U ^
Benzo(b)fluoranthene	ug/kg dry	<RSL RES SOIL (November 2012): 0.15 mg/kg >	38 U	37 U	36 U
Benzo(g,h,i)perylene	ug/kg dry		38 U	37 U	36 U
Benzo(k)fluoranthene	ug/kg dry	<RSL RES SOIL (November 2012): 1.5 mg/kg >	38 U	37 U	36 U
Benzyl butyl phthalate	ug/kg dry	<RSL RES SOIL (November 2012): 260 mg/kg >	380 U	370 U	360 U
Bis(2-chloroethoxy)methane	ug/kg dry	<RSL RES SOIL (November 2012): 180 mg/kg >	380 U	370 U	360 U
Bis(2-chloroisopropyl) ether	ug/kg dry		380 U	370 U	360 U

**Table 9
FCX Soil SVOC Results
June 2013**

		Station ID	FCX03	FCX04	FCX05
		Sample ID	FCX030613	FCX040613	FCX050613
		Sample Date	6/5/2013 17:22	6/5/2013 16:30	6/5/2013 15:52
Analyte	Units	Comparison Standard			
Bis(2-ethylhexyl) phthalate	ug/kg dry	<RSL RES SOIL (November 2012): 35 mg/kg >	380 U	370 U	360 U
Caprolactam	ug/kg dry	<RSL RES SOIL (November 2012): 31000 mg/kg >	380 U	370 U	360 U
Carbazole	ug/kg dry		38 U	37 U	36 U
Chrysene	ug/kg dry	<RSL RES SOIL (November 2012): 15 mg/kg >	38 U	37 U	36 U
Di-n-butylphthalate	ug/kg dry	<RSL RES SOIL (November 2012): 6100 mg/kg >	380 U	370 U	360 U
Di-n-octylphthalate	ug/kg dry	<RSL RES SOIL (November 2012): 730 mg/kg >	380 U	370 U	360 U
Dibenz(a,h)anthracene	ug/kg dry	<RSL RES SOIL (November 2012): 0.015 mg/kg >	38 U ^	37 U ^	36 U ^
Dibenzofuran	ug/kg dry	<RSL RES SOIL (November 2012): 78 mg/kg >	38 U	37 U	36 U
Diethyl phthalate	ug/kg dry	<RSL RES SOIL (November 2012): 49000 mg/kg >	380 U	370 U	360 U
Dimethyl phthalate	ug/kg dry		380 U	370 U	360 U
Fluoranthene	ug/kg dry	<RSL RES SOIL (November 2012): 2300 mg/kg >	38 U	37 U	36 U
Fluorene	ug/kg dry	<RSL RES SOIL (November 2012): 2300 mg/kg >	38 U	37 U	36 U
Hexachlorobenzene (HCB)	ug/kg dry	<RSL RES SOIL (November 2012): 0.3 mg/kg >	38 U	37 U	36 U
Hexachlorocyclopentadiene (HCCP)	ug/kg dry	<RSL RES SOIL (November 2012): 370 mg/kg >	380 U	370 U	360 U
Hexachloroethane	ug/kg dry	<RSL RES SOIL (November 2012): 12 mg/kg >	380 U	370 U	360 U
Indeno (1,2,3-cd) pyrene	ug/kg dry	<RSL RES SOIL (November 2012): 0.15 mg/kg >	38 U	37 U	36 U
Isophorone	ug/kg dry	<RSL RES SOIL (November 2012): 510 mg/kg >	380 U	370 U	360 U
Naphthalene	ug/kg dry	<RSL RES SOIL (November 2012): 3.6 mg/kg >	38 U	37 U	36 U
Nitrobenzene	ug/kg dry	<RSL RES SOIL (November 2012): 4.8 mg/kg >	380 U	370 U	360 U
Pentachlorophenol	ug/kg dry	<RSL RES SOIL (November 2012): 0.89 mg/kg >	380 U	370 U	360 U
Phenanthrene	ug/kg dry		38 U	37 U	36 U
Phenol	ug/kg dry	<RSL RES SOIL (November 2012): 18000 mg/kg >	380 U	370 U	360 U
Pyrene	ug/kg dry	<RSL RES SOIL (November 2012): 1700 mg/kg >	38 U	37 U	36 U
bis(2-Chloroethyl) Ether	ug/kg dry	<RSL RES SOIL (November 2012): 0.21 mg/kg >	380 U ^	370 U ^	360 U ^
n-Nitroso di-n-Propylamine	ug/kg dry	<RSL RES SOIL (November 2012): 0.069 mg/kg >	380 U ^	370 U ^	360 U ^
Nitrosodiphenylamine/Diphenylamine	ug/kg dry	<RSL RES SOIL (November 2012): 1500 mg/kg >	380 U	370 U	360 U

ANALYTICAL DATA QUALIFIERS

U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
O	Other qualifiers have been assigned providing additional information. These explanatory qualifiers are included in the printable pdf report and in other columns in the export files.
R	The presence or absence of the analyte can not be determined from the data due to severe quality control problems. The data are rejected and considered unusable.

Legend

Non-detect, MRL shown	5.0 U
Non-detect, MRL exceeds standard, MRL shown	5.0 U ^
Rejected, unusable data	380 U,R,O

**Table 10
FCX Soil Metals Results
June 2013**

		Station ID	FCX03	FCX04	FCX05
		Sample ID	FCX030613	FCX040613	FCX050613
		Sample Date	6/5/2013 17:22	6/5/2013 16:30	6/5/2013 15:52
Analyte	Units	Comparison Standard			
Aluminum	mg/kg dry	<RSL RES SOIL (November 2012): 77000 mg/kg >	3400 J,O	4800	2900
Antimony	mg/kg dry	<RSL RES SOIL (November 2012): 31 mg/kg >	0.20 U,J,O	0.20 U	0.20 U
Arsenic	mg/kg dry	<RSL RES SOIL (November 2012): 0.39 mg/kg >	1.2 ^	0.46 J,O ^	0.88 J,O ^
Barium	mg/kg dry	<RSL RES SOIL (November 2012): 15000 mg/kg >	22	13	9.3
Beryllium	mg/kg dry	<RSL RES SOIL (November 2012): 160 mg/kg >	0.30 U	0.30 U	0.30 U
Cadmium	mg/kg dry	<RSL RES SOIL (November 2012): 70 mg/kg >	0.12	0.41	0.10 U
Calcium	mg/kg dry		2300 J,O	31000	39000
Chromium	mg/kg dry		4.3	7.8	4.2
Cobalt	mg/kg dry	<RSL RES SOIL (November 2012): 23 mg/kg >	0.6	0.50 U	0.50 U
Copper	mg/kg dry	<RSL RES SOIL (November 2012): 3100 mg/kg >	3.7	2.2	12
Iron	mg/kg dry	<RSL RES SOIL (November 2012): 55000 mg/kg >	2500 J,O	7400	3300
Lead	mg/kg dry	<RSL RES SOIL (November 2012): 400 mg/kg >	14	4.9	3.3
Magnesium	mg/kg dry		300	660	410
Manganese	mg/kg dry	<RSL RES SOIL (November 2012): 1800 mg/kg >	44	17	18
Molybdenum	mg/kg dry	<RSL RES SOIL (November 2012): 390 mg/kg >	0.99 U	1.0 U	1.0 U
Nickel	mg/kg dry	<RSL RES SOIL (November 2012): 1500 mg/kg >	1.5	1.0 U	1.2
Potassium	mg/kg dry		170	280	180
Selenium	mg/kg dry	<RSL RES SOIL (November 2012): 390 mg/kg >	0.58	0.40 U	0.46
Silver	mg/kg dry	<RSL RES SOIL (November 2012): 390 mg/kg >	0.50 U	0.50 U	0.50 U
Sodium	mg/kg dry		99 U	100 U	100 U
Strontium	mg/kg dry	<RSL RES SOIL (November 2012): 47000 mg/kg >	11	110	210 J,O
Thallium	mg/kg dry	<RSL RES SOIL (November 2012): 0.78 mg/kg >	0.20 U	0.20 U	0.20 U
Tin	mg/kg dry	<RSL RES SOIL (November 2012): 47000 mg/kg >	1.5 U	1.5 U	1.5 U
Titanium	mg/kg dry		37	78	26
Vanadium	mg/kg dry	<RSL RES SOIL (November 2012): 390 mg/kg >	7.5	18	5.8
Yttrium	mg/kg dry		2.1	1.2	1.6
Zinc	mg/kg dry	<RSL RES SOIL (November 2012): 23000 mg/kg >	26	8.9	8.3

Analytical Data Qualifiers

U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
O	Other qualifiers have been assigned providing additional information. These explanatory qualifiers are included in the printable pdf report and in other columns in the export files.

Legend

Detection, Result Shown	5.0
Non-detect, MRL shown	5.0 U
Result exceeds standard, Result shown	5.0 ^

**Table 11
FCX Soil Dioxin Results
June 2013**

			Station ID	FCX04	FCX05
			Sample ID	FCX040613	FCX050613
			Sample Date	6/5/2013 16:30	6/5/2013 15:52
Analyte	Units	Comparison Standard			
% Moisture	%		6.6	5.4	
1,2,3,4,6,7,8-Heptachlorodibenzodioxin	ng/kg dry		120	310	
1,2,3,4,6,7,8-Heptachlorodibenzofuran	ng/kg dry		5.2	10	
1,2,3,4,7,8,9-Heptachlorodibenzofuran	ng/kg dry		0.60 J,O	1.1 U,O	
1,2,3,4,7,8-Hexachlorodibenzodioxin	ng/kg dry		1.3	6.5	
1,2,3,4,7,8-Hexachlorodibenzofuran	ng/kg dry		0.44 J,O	2.3	
1,2,3,6,7,8-Hexachlorodibenzodioxin	ng/kg dry		2.2	9.1	
1,2,3,6,7,8-Hexachlorodibenzofuran	ng/kg dry		0.41 J,O	1.2	
1,2,3,7,8,9-Hexachlorodibenzodioxin	ng/kg dry		2.6	8.1	
1,2,3,7,8,9-Hexachlorodibenzofuran	ng/kg dry		0.25 J,O	0.64 J,O	
1,2,3,7,8-Pentachlorodibenzodioxin	ng/kg dry		0.76 J,O	3.2	
1,2,3,7,8-Pentachlorodibenzofuran	ng/kg dry		0.30 J,O	0.97 U,O	
2,3,4,6,7,8-Hexachlorodibenzofuran	ng/kg dry		0.46 U,O	1.4	
2,3,4,7,8-Pentachlorodibenzofuran	ng/kg dry		0.28 U,O	1.4	
2,3,7,8-Tetrachlorodibenzodioxin	ng/kg dry	<RSL RES SOIL (May 2013): 0.0000045 mg/kg or (4.5 ng/kg)>	0.26 U,O	0.63 U,O	
2,3,7,8-Tetrachlorodibenzofuran	ng/kg dry		0.14 J,O	1.1	
Heptachlorodibenzodioxin (Total)	ng/kg dry		270 J,O	740 J,O	
Heptachlorodibenzofuran (Total)	ng/kg dry		13 J,O	27 J,O	
Hexachlorodibenzodioxin (Total)	ng/kg dry		29 J,O	130 J,O	
Hexachlorodibenzofuran (Total)	ng/kg dry		6.0 J,O	21 J,O	
Octachlorodibenzodioxin	ng/kg dry		8700 J,O	3600	
Octachlorodibenzofuran	ng/kg dry		7.3	13	
Pentachlorodibenzodioxin (Total)	ng/kg dry		4.8 J,O	36 J,O	
Pentachlorodibenzofuran (Total)	ng/kg dry		3.2 J,O	31 J,O	
TEQ (Avian Toxic. Equiv. Value, WHO TEQ-98)	ng/kg dry		3.0 J,O	8.9	
TEQ (Fish Toxic. Equiv. Value, WHO TEQ-98)	ng/kg dry		3.1 J,O	9.4	
TEQ (Mammalian Toxic. Equiv. Value, WHO TEQ-2005)	ng/kg dry		5.7 J,O	12	
Tetrachlorodibenzodioxin (Total)	ng/kg dry		1.5 J,O	15 J,O	
Tetrachlorodibenzofuran (Total)	ng/kg dry		1.5 J,O	38 J,O	

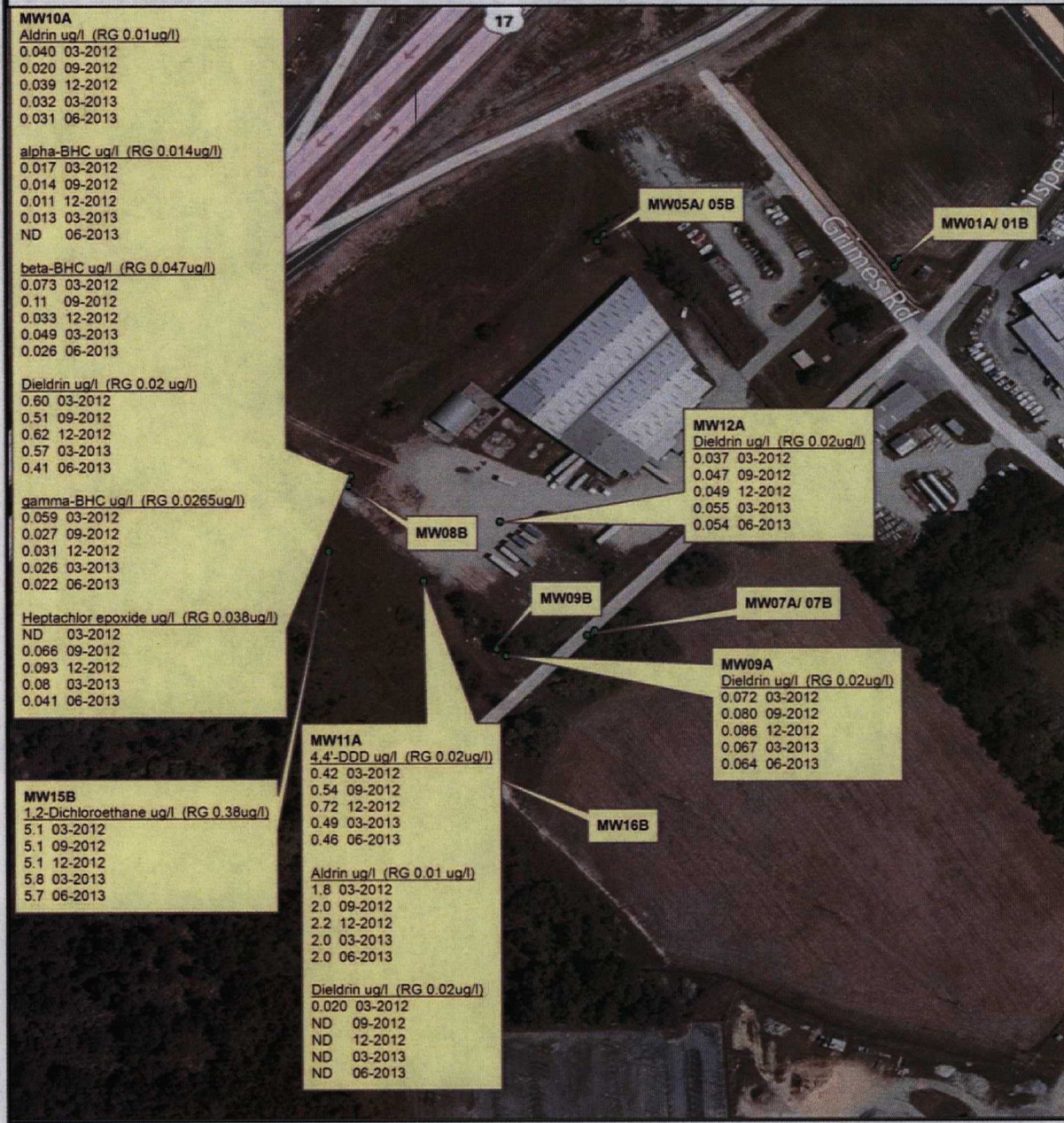
ANALYTICAL DATA QUALIFIERS

- U The analyte was not detected at or above the reporting limit.
- J The identification of the analyte is acceptable; the reported value is an estimate.
- O Other qualifiers have been assigned providing additional information. These explanatory qualifiers are included in the printable pdf report and in other columns in the export files.

Legend

Detection, Result Shown	5.0
Non-detect, MRL shown	5.0 U

Figure 1 Results Above Remediation Goals



FCX Washington
 US EPA Region 4
 Science & Ecosystem Support Division
 Athens, GA 30605
 July 2013



Figure 2 Soil Sample Locations



FCX Washington
US EPA Region 4
Science & Ecosystem Support Division
Athens, GA 30605
July 2013



Figure 4

Figure 4: Institutional Control (IC) Base Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the site, and is not intended for any other purpose.

**Not included from the Sampling Investigation Report:
Appendix A - Field Logbooks
Appendix B - Analytical Data Sheets**

Appendix E Interviews

Interview Record

Site Name: FCX

EPA ID No: NCD981475932

Interviewer's Name: Kerisa Coleman, EPA Region 4 CIC

Interviewee's Name/Title: Arthur Smitwick, Park Boat Company (Current Site Owner)

Contact Information: (252) 946-3248

Date: January 21, 2015

Type of Interview (Circle one): In person

Phone

E-Mail

FCX

Five-Year Review Questionnaire

Community Involvement

Interview Category: Site Owner

- 1.) What is your overall impression of the project?

My overall impression is that everything is moving in the right direction.

- 2.) How well do you believe the remedy currently in place is performing?

Based on the information that has been shared with me, I feel that all actions that have been taken place here at the site have performed well.

- 3.) Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents in the last five years?

There are no residents in close proximity to the Site, but I have not received nor am I aware of any complaints or inquiries regarding the Site.

- 4.) Are you aware of any community concerns regarding the Site or its operation and administration? If so, please give details.

No.

- 5.) Are you aware of any changes in projected land use at the Site?

The Department of Transportation took part of the Site to make a bypass of the highway, but they have since completed that project. I purchased the remainder. My plan was to purchase it for the warehouse that's on Site for boat storage. We are a retail boat dealership. I needed a place to store boats and it is currently being used for that. At some point in the near future I may sub-lease a portion of it for some others for different businesses but cannot foresee what that may be at the present time. However, if we do, we would be in contact with you guys to make sure that we are all on the same page.

- 6.) Is there a continuous on-site O & M presence? If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.

Up until last year, there were some individuals coming out every three to six months, but I have not seen them as regularly since that time.

- 7.) Do you have any other comments, suggestions or recommendations regarding the Site's management or operation?

My only question is and there seems to be discussions amongst different entities; but, it seems like it is kind of hard to close it out and be done. I am not sure if it is the nature of this Site or if it is the way that it is done with all Sites. It may be a lot of stuff going on that I do not understand. I am not really clear about where it is going. When I purchased the property, I was aware and remain aware of the challenges that it had. From a general taxpayer's perspective, it is a lot of time and money being invested in conducting the 5YR.

- 8.) Do you feel well informed about the Site's activities and progress? If not, what other methods of conveying information should EPA use?

Yes, EPA has been very responsive and provides appropriate education. I receive updates from EPA, since it is the lead agency. EPA has always been good about informing us of activities. EPA generally keep us informed about what they are doing, and if we are not doing anything that you are not happy with, please let us know because we want to be a good neighbor.

Interview Record

Site Name: FCX

EPA ID No: NCD981475932

Interviewer's Name: Kerisa Coleman, EPA Region 4 CIC

Interviewee's Name/Title: William Joyner, EPA Remedial Project Manager

Contact Information: joyner.william@epa.gov (404) 562-8795

Date: January 20, 2015

Type of Interview (Circle one): In person Phone E-Mail

FCX

Five-Year Review Questionnaire

Community Involvement

Interview Category: U.S. EPA (Region 4)

1.) What is your overall impression of the project?

The OU1 and OU2 remedies are protective in the short term. Institutional controls will need to be implemented for the Site.

2.) How well do you believe the remedy currently in place is performing?

The Site's OU1 remedy currently protects human health and the environment in the short – term because ground water is not being used as a ground water source on site or off site.

The Site's OU2 remedy is currently protects human health and the environment in the short – term because most of the contaminated soil(s) have been excavated, and there is no exposure pathway for the contaminated soil that remains at the Site.

3.) Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents in the last five years?

To the best of my knowledge there have been no complaints regarding environmental issues or the remedial action from residents. Past renters of the FCX warehouse and the current property owner have made inquiries about environmental issues and remedial actions taken at the site.

4.) Are you aware of any community concerns regarding the Site or its operation and administration? If so, please give details.

No

5.) Are you aware of any changes in projected land use at the Site?

Other than the use of the on- Site warehouse and parking area to store pleasure boats by the current owner, I am not aware of any changes in projected land use.

6.) Are you comfortable with the status of the institutional controls at the Site? If no, what do you see as the outstanding issues?

Institutional controls will need to be developed for the Site.

7.) Do you have any comments, suggestions or recommendations regarding the Site's management or operation?

Institutional controls will need to be developed for the Site.

Interview Record

Site Name: FCX

EPA ID No: NCD981475932

Interviewer's Name: Kerisa Coleman, EPA Region 4 CIC

Interviewee's Name/Title: Nile Testerman, Environmental Engineer, NCDENR

Contact Information: nile.testerman@ncdenr.gov (910) 707-8339

Date: January 20, 2015

Type of Interview (Circle one): In person Phone E-Mail

Interview Record

Site Name: FCX

EPA ID No: NCD981475932

Interviewer's Name: Kerisa Coleman, EPA Region 4 CIC

Interviewee's Name/Title: Cyrus Parker, North Carolina DOT GeoEnvironmental Supervisor

Contact Information: cfparker@ncdot.gov; (919) 707-6868

Date: February 2, 2015

Type of Interview (Circle one): In person

Phone

E-Mail

FCX

Five-Year Review Questionnaire

Community Involvement

Interview Category: NC Department of Transportation

1.) What is your overall impression of the project?

The remedy seems to be working well for the site and community

2.) How well do you believe the remedy currently in place is performing?

Very well

3.) Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents in the last five years?

No

4.) Are you aware of any community concerns regarding the Site or its operation and administration? If so, please give details.

No

5.) Are you aware of any changes in projected land use at the Site?

No

6.) Are you comfortable with the status of the institutional controls at the Site? If no, what do you see as the outstanding issues?

Yes

7.) Do you have any other comments, suggestions or recommendations regarding the Site's management or operation?

No