



Environmental Remediation Group

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SENT VIA ELECTRONIC MAIL

January 14, 2020

Mr. Chad R. Schoop, P.E.
Professional Engineer
Bureau of Industrial Site Cleanup (BISC)
Nevada Division of Environmental Protection (NDEP)
2030 E. Flamingo Road, Suite 230
Las Vegas, NV 89119

**RE: Fourth Quarter 2019 Quarterly Progress Report
Former Stauffer Chemical Company Facility ("Site")
NDEP Facility ID #H-000536 Pioneer/Stauffer
Henderson, NV**

Dear Mr. Schoop:

This Quarterly Progress Report (QPR), prepared on behalf of Stauffer Management Company LLC (SMC) and Pioneer Americas LLC [dba] Olin Chlor Alkali Products (Pioneer), summarizes Phase II Environmental Conditions Investigation (ECI) activities performed at the Site during the Fourth Quarter of 2019. This QPR is submitted to NDEP in accordance with the June 28, 1996 Phase II Consent Agreement, entered into by NDEP, Pioneer, and SMC. Notable activities performed during the reporting period include:

- On behalf of Pioneer and SMC, the *Third Quarter 2019 QPR* was submitted to NDEP on October 14, 2019.
- In October 2019, Pioneer implemented the NDEP-approved work plan for the shallow soil investigation in the vicinity of the Historic Caustic Storage Area (HCSA). The field work was observed by NDEP during implementation.
- Pioneer submitted the *Remedial Closures – Conceptual Design Package for Letter of Understanding (LOU) Areas 17 and 20* on November 13, 2019. The design package was approved by NDEP on December 31. Pioneer is preparing a draft remedial action implementation work plan, as requested in the approval letter.
- On October 17, 2019, NDEP executed the *Environmental Covenant (EC)* for BHC Cake Pile 3 that was previously submitted on behalf of SMC/Syngenta Crop Protection, LLC [Syngenta]. The EC was recorded with the Clark County on December 23, 2019.

- On behalf of SMC/Syngenta, a *Design Report – Cover System Upgrade for the Drum Burial Waste Management Area (LOU 5)* was submitted to NDEP on October 31, 2019. The Pre-Bid Site Walk for the Cover System Upgrade was performed on December 17, 2019.
- The OSSM Companies (Pioneer, SMC/Syngenta, and Montrose Chemical Corporation of California) performed the following notable activities during the reporting period:
 - The Companies received, from NDEP on October 9, 2019, a copy of the final meeting minutes of the 3Q-2019 quarterly status call.
 - On October 11, 2019, the OSSM Companies received, from NDEP, a portion of the relevant data collected from NERT's "new" monitor well(s) in the vicinity of Site's eastern property boundary. On October 23, the Companies requested NDEP for the remaining available data from the new NERT monitor wells. NDEP circulated the remaining available data on January 7, 2020. The Companies review of the received data is ongoing.
 - The Companies submitted a Minor Source Permit Renewal Application, dated November 22, 2019, to the Clark County Department Air Quality (DAQ) for the Companies groundwater treatment system (GWTS)' air emissions. On December 3, the DAQ acknowledged the receipt of the application and indicated that the submitted application was complete. The application is currently under DAQ's review.
 - During the reporting period, the GWTS operated appropriately and continues to effectively capture and contain impacted groundwater.
 - The Companies are continuing efforts to characterize/investigate Site LOU areas to achieve NDEP administrative closure, or no further action determinations.

Should you have any questions related to the information contained herein, please contact me at (423) 336-4675, via email at cesakkiperumal@olin.com, or an appropriate alternate Company representative.

Sincerely,



Chinny Esakkiperumal, PG, CEM (EM2409; Expires October 12, 2021)
Olin Corporation

Enclosures:
Former Stauffer Chemical Company Facility Fact Sheet
Selected Site Assessment Areas Status Update

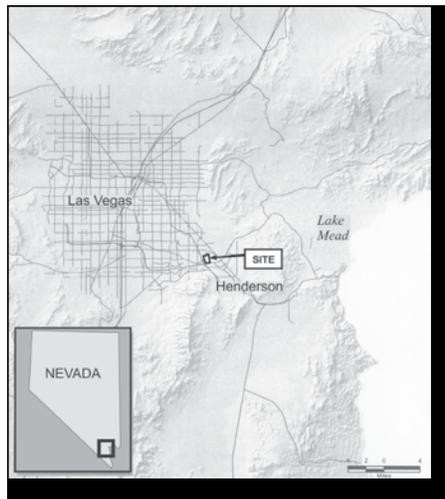
cc: James (JD) Dotchin, Chief, BISC, NDEP, Las Vegas
J. Carlton Parker, Supervisor, BISC, NDEP, Las Vegas
BMI Compliance Coordinator – NDEP Las Vegas, NV
NDEP c/o Broadbent & Associates [2]
Jeff Gibson – American Pacific Corporation
Mark Paris – Basic Remediation Company
Lee Farris – Basic Remediation Company
Ranjit Sahu – Basic Remediation Company
Joe Kelly – Montrose Chemical Corporation of California
Ed Modiano – Montrose Chemical Corporation of California
Jay Steinberg – Nevada Environmental Response Trust
Allan DeLorme – Environ
John Pekala – Environ
Dave Share – Olin Corporation
Charles Elmendorf – Stauffer Management Company LLC
Darren Croteau – Terraphase Engineering, Inc.
George Crouse – Syngenta Crop Protection, LLC
Nicholas Pogoncheff – PES Environmental, Inc.
Dick Pfarrer – TIMET
Enoe Marcum – WAPA

FACT SHEET

Environmental Investigation and Cleanup at the FORMER STAUFFER CHEMICAL COMPANY FACILITY

HENDERSON, NEVADA

Stauffer Chemical Company formerly operated a chemical manufacturing facility at the property (i.e., “the Site”) which is now occupied by Olin Chlor Alkali Products at the western end of the Black Mountain Industrial Complex (formerly known as the BMI Complex), in an unincorporated area of Clark County, near Henderson, Nevada. Stauffer ceased operations at the property in 1988 when the property was purchased by Pioneer Chlor Alkali, Inc. (Pioneer). Olin Corporation (Olin) purchased the property from Pioneer Americas LLC (Pioneer) in 2007. Pioneer, Stauffer Management Company LLC (SMC), and Syngenta Crop Protection, Inc. (Syngenta) are working in cooperation with the Nevada



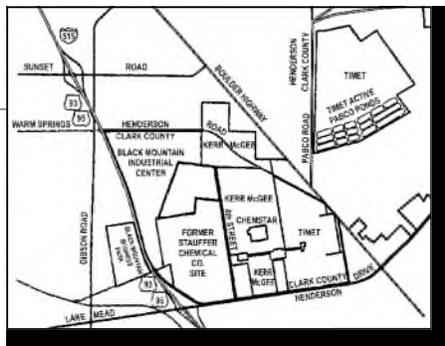
Division of Environmental Protection (NDEP) on continuing environmental investigation and cleanup activities at the Site. This Fact Sheet, prepared on behalf of Pioneer and SMC/Syngenta, is

intended to keep community members informed about the status of the environmental investigation and cleanup. Other companies at neighboring properties within the BMI Complex are also performing environmental work. These companies include: Nevada Environmental Response Trust (previously known as Tronox LLC; formerly Kerr-McGee Chemical Company), Titanium Metals Corporation and Basic Remediation Company. Montrose Chemical Corporation of California (Montrose) is also performing environmental work at the Site in areas associated with their former operations. All of these companies have developed separate Fact Sheets related to their environmental work.

HISTORY

In 1941, approximately 5,000 acres of desert in the southwest portion of the Las Vegas Valley was deeded by the United States for use as what was to become the world’s largest magnesium plant (BMI Complex), a plant constructed for the U.S. Government that would play a critical role in World War II. The location was selected in part based on its proximity to magnesite ore and an adequate power supply (then recently completed Hoover Dam).

The western end of the original BMI Complex included a chlorine-



caustic plant which was necessary to support the U.S. Government’s production of magnesium. In 1945, Stauffer Chemical Company leased the chlorine-caustic plant from the U.S. government, and later purchased the property in 1952.

The property was ultimately sold to

Pioneer in 1988. During Stauffer Chemical Company occupancy, the manufactured products included chlorine and caustic, and later, agricultural chemicals. Additionally, portions of the property were leased to Montrose for their manufacture of chemicals.

Today, the Site is operated by Olin Chlor Alkali Products for the production of bleach, as well as handling of chlorine, caustic soda, and hydrochloric acid; non-chlor alkali chemical productions ceased prior to 1988.

ENVIRONMENTAL WORK

As part of the 1983 Consent Order entered into between the NDEP, Stauffer and Montrose, a groundwater pump and treatment system was installed to address impacted groundwater identified at the Site. The groundwater pump and treatment system at the Site continues to effectively operate, as do other groundwater pump and treatment systems being operated by other nearby companies to address impacted groundwater.

In 1991, Pioneer and SMC entered into a Consent Agreement with the NDEP to jointly conduct a Phase I Environmental Conditions Assessment (ECA) of the Site. The purpose of the ECA was to identify areas of potential environmental concern. Pioneer and SMC submitted their ECA report to the NDEP in 1993 and thereafter agreed to the terms of the 1994 Phase II Letter of Understanding (LOU) with the NDEP. The LOU identified issues of potential environmental concern (Study Items) to be addressed in the next phase of investigation. In 1996, Pioneer and SMC entered into a subsequent Consent Agreement with NDEP requiring them to jointly conduct a Phase II Environmental Conditions Investigation (ECI) and to prepare Remedial Alternative Study (RAS) work plans for those Study Items, as

necessary. Since 1996, several phases of environmental characterization and a series of reports have been completed by Pioneer and SMC to assess soil and groundwater conditions, and RAS work plans have been prepared and remedial actions implemented, including the construction of asphalt caps (in 2003 and 2004) over the former agricultural chemical manufacturing plant areas.

The focus of recent environmental work activities has been developed based upon the review of historical Site operations, submittal of additional work plans, preparation of reports and correspondence with the NDEP, and development of a list of Site related chemicals (SRCs) to assist in additional sampling activities. Additionally, annual groundwater monitoring is performed to assess the occurrence of chemicals in groundwater at the Site and areas downgradient of the existing groundwater pump and treatment system, and to demonstrate compliance for operation of the groundwater pump and treatment system in accordance with the terms of the 1983 Consent Order. The information and data from previous reports and investigations

have been integrated into a comprehensive Conceptual Site Model (CSM) that was prepared by Pioneer, SMC/Syngenta and Montrose in July 2008. The CSM presents the current understanding of Site conditions, describes potential exposure pathways related to soil and groundwater conditions, and identifies areas where future environmental characterization may be appropriate. The companies are currently in the process of finalizing a Groundwater Remedial Alternatives Study for the evaluation of possible remedial actions.

FUTURE WORK

Pioneer and SMC/Syngenta will continue to perform environmental investigations as described above in cooperation with the NDEP. Additional environmental cleanup work will be conducted as appropriate based on the results of these investigations and the CSM. The groundwater pump and treatment system will continue to be operated and monitored to maintain its effectiveness.

ADDITIONAL INFORMATION AND COMMUNITY INVOLVEMENT

The NDEP oversees all aspects of the environmental work at the Site.

Additional information from the NDEP can be obtained by contacting Chad R. Schoop, at 702-486-2850 x 248 or cschoop@ndep.nv.gov.

The companies welcome community input for this project and recognize the need to respond to community concerns. Previous reports related to the environmental work at the Site can be obtained from NDEP's offices in Las Vegas or Carson City.

Selected Site Assessment Areas Status Update
Updated January 2020

Area Description	LOU Item No.	Background Documents	Current Status
Inactive CAPD Ponds 1,3,4 and Associated Process Piping	17	5,8	<p>Completed: NDEP issued approval of Multi-Milestone Report on November 21, 2018. Prepared and submitted conceptual design document for LOUs 17 and 20 on November 13, 2019. NDEP approved the conceptual design on December 31, 2019.</p> <p>Projected Activity: Work Plan for the implementation of the Remedial Action for LOUs 17 and 20.</p>
Inactive CAPD Pond 6	20		
Inactive CAPD Pond 2 and Associated Process Piping	18	5	Projected Activity: RI SAP & CSM
CAPD Pond 5	19	5	<p>Projected Activity: RI SAP & CSM Note: Active ponds; Subject to NPDES Permit</p>
CAPD Ponds 6A and 9	Non-LOU		
Historic Caustic Storage Area (HCSA)	Non-LOU	9	<p>Completed: Submitted revised investigation Work Plan on August 13, 2019. NDEP approved Work Plan on August 27, 2019.</p> <p>Field work was implemented in October 2019.</p> <p>Projected Activity: Review data and discuss next steps with NDEP.</p>
ACD Drum Burial Waste Management Area	5	1,2,5,6,7	<p>Completed: On May 1, 2019, NDEP issued Letter of Acceptance, in response to February 1, 2017 Remedial Alternatives Study, for the ACD Drum Burial Waste Management Area LOU No. 5.</p> <p>Submitted the Design Report for the cover system upgrade on October 31, 2019.</p> <p>Projected Activity: NDEP review of the Design Report.</p>

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Updated January 2020**

Area Description	LOU Item No.	Background Documents	Current Status
Phosphoric Acid Pond, Three Trenches (LOU 4), Leach Beds (LOU 9) and Associated Conveyance	4 and 9	1,2,5,6,7	<p>Completed: CSM (Feb 3, 2015) accepted by NDEP (August 27, 2016). Revised DUE (September 25, 2015) accepted by NDEP (January 7, 2016).</p> <p>Projected Activity: RAS</p>
Former ACD Plant Area (Asphalt-Concrete Cap Covered Area) Including: Former ACD Plant Site (LOU 8), Former Lindane Plant Area (LOU 10), Former BHC Cake Piles 1 & 2 and Capped Area of Former BHC Loader Haul Route (LOU 12) and Former Vapor Incinerator Area (LOU 14)	8,10, 12 and 14	1,3,5	<p>Completed: DVSR & EDD Vadose Zone Data Gap Analysis and Characterization approved by NDEP (April 2014).</p> <p>Pending: Comprehensive CSM/DUE submitted to NDEP March 31, 2016.</p> <p>Projected Activity: RAS</p>
BHC Cake Pile 3 and Non-Capped Area Former BHC Haul Route (LOU 12)	12	1,4,5,6	<p>Completed: Design Report, BHC Cake Pile 3 Cover System (April 7, 2016) accepted by NDEP (May 24, 2016). BHC Cake Pile 3 Cover System Upgrade completed First Quarter 2017. RAS (Revision 1, August 10, 2018) accepted by NDEP (October 21, 2018).</p> <p>Revised Draft Environmental Covenant (EC), and Site Management Plan submitted to NDEP March 28, 2019. The EC was signed by all relevant parties on October 17, 2019.</p> <p>Fully executed environmental covenant recorded on December 23, 2019.</p>
Former HCL/BCME Release Area (LOU 29)	29	1,2,5	<p>Completed: Closure Report (January 16, 2018).</p> <p>Closed LOU No. 29: NDEP issued No Further Action Determination May 9, 2018.</p>

Selected Site Assessment Areas Status Update
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Area Description	LOU Item No.	Background Documents	Current Status
Inactive Trithion USTs	Non-LOU	6,7	<p>Completed: Data Transmittal Report, Assessment of Underground Trithion Waste Treatment Tanks (June 6, 2017).</p> <p>Closed Non-LOU Area: NDEP issued No Further Investigation Letter October 13, 2017</p>
Inactive ACD Ponds 1 and 2	7	1,2,5,6,7	Projected Activity: RI SAP
Former Wastewater Ponds 1 & 2 and CAPD Ponds 7 & 8	6, 21, & 22	1,5	<p>Completed: Revised Work Plan for Vadose Zone Characterization (accepted by NDEP January 2013). Revised EDD and DVSR (accepted by NDEP November 2013). Submitted Recommendation for Project Closeout Process September 4, 2014 (accepted by NDEP September 12, 2014).</p>
CAPD Pond 8	22	1,5	<p>Completed: Administrative Closure for former wastewater pond (see 22 above).</p> <p>Projected Activity: RI SAP & CSM for active pond Note: Active pond; Subject to NPDES Permit</p>
Former Cell Renewal Building and Associated Conveyance Facilities	11	5	Projected Activity: RI SAP & CSM
Site-Wide Groundwater	Non-LOU	1	<p>Completed: NDEP provided comments on revised draft on April 26, 2019. The Companies submitted a revised draft RAS, incorporating NDEP comments, on June 28, 2019.</p> <p>Pending Activities: Agency review of the revised RAS. The Companies to evaluate NERT's "new" east side data.</p>

Selected Site Assessment Areas Status Update Updated January 2020

Area Description	LOU Item No.	Background Documents	Current Status
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Notes:

- 1- Hargis + Associates, Inc. (2008). Conceptual Site Model, Former Montrose and Stauffer Facilities and Downgradient Areas to Las Vegas Wash. Henderson, Clark County, Nevada. September 21.
- 2- PES Environmental, Inc. (2008). Area-Specific Conceptual Site Models: BHC Cake Pile 2 (Component of LOU No. 12); ACD Drum Burial Waste Management Area (LOU No. 5); Former Leach Beds and Phosphoric Acid Pond (LOU No. 4) and Trenches (LOU NO. 9); Inactive ACD Ponds 1 & 2 (LOU No. 7); and Former HCL/BCME Release Area (LOU No. 29). Former Stauffer Chemical Company Facility. Henderson, Nevada. April 11.
- 3- PES Environmental, Inc. (2008). Area-Specific Conceptual Site Models: Former ACD Plant (LOU No. 8); Former Lindane Plant (LOU No. 10); and Former BHC Cake Piles 1 and 2 and Former BHC Loader Haul Route (LOU No. 12). Former Stauffer Chemical Company Facility. Henderson, Nevada. June 12.
- 4- PES Environmental, Inc. (2008). Area-Specific Conceptual Site Model for Shallow Soil. Former Stauffer Chemical Company Facility. Henderson, Nevada. July 1.
- 5- Stauffer Management Company, Pioneer Chlor Alkali Company, Inc. (1997). Response to LOU Information Request. August 8.
- 6- PES Environmental, Inc. (2009). Field Activities Summary Report, Subsurface Reconnaissance and Collection of Waste Characterization Samples, Former Stauffer Chemical Company Facility. Henderson, Nevada. July 1.
- 7- PES Environmental, Inc. (2010). Waste Analysis Plan, Corrective Action Management Unit (CAMU), Former Stauffer Chemical Company Facility. Henderson, Nevada. July 19.
- 8 - AMEC FW, with transmittal letter from Olin (2015). Vadose Zone Characterization Work Plan, Inactive CAPD Ponds 1,3,4 (LOU 17) and 6 (LOU 20), Former Stauffer Chemical Company Facility, Henderson, Nevada. October 15.
- 9 - Wood, with transmittal letter from Olin (2019). Shallow Soil Characterization Work Plan, Historic Caustic Storage Area (HCSA), Former Stauffer Chemical Company Facility, Henderson, Nevada. April 23.

Acronyms:

- ACD - Agricultural Chemical Division
- AMEC FW - AMEC Foster Wheeler
- BCME - Bischloromethylether
- BHC - Benzene Hexachloride
- CAPD - Chlor Alkali Products Division
- Companies - Pioneer Americas, LLC, Stauffer Management Company, LLC/Syngenta Crop Protection, Inc., and Montrose Chemical Corporation of California
- CSM - Conceptual Site Model
- DUE - Data Usability Evaluation
- Geosyntec - Geosyntec Consultants, Inc.
- Hargis - Hargis + Associates, Inc.
- HCL - Hydrochloric Acid
- HCSA - Historic Caustic Storage Area
- LOU - Letter of Understanding
- NDEP - Nevada Division of Environmental Protection
- NFA - No Further Action
- PES - PES Environmental, Inc.
- RAS - Remedial Alternative Study
- RI - Remedial Investigation
- SAP - Sampling & Analysis Plan
- USTs - Underground Storage Tanks
- WP - Work Plan