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September 12, 2013

Via Hand Delivery and Electronic Mail
Mr. Brent Wade, MC-123
Texas Commission on Environmental Quality
Post Office Box 13087
Austin, Texas 78711-3087

Via Certified U.S. Mail No. 7012 0470 0002 1544 8078 and Electronic Mail
Ms. Susan Spaulding
EPA Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202

Re: Affected Property Assessment Report, Former Operating Plant, Frisco Recycling Center, Frisco, Collin County, Texas (Agreed Order Docket No. 2011-1712-IHW-E); City of Frisco comments

Dear Mr. Wade and Ms. Spaulding:

This submittal is the City of Frisco's (the City's) comments on the Affected Property Assessment Report (APAR) submitted by Exide Technologies (Exide) for the former Exide battery recycling facility in Frisco, Texas. This area is also known as the Bowtie Parcel in the context of the Exide – City of Frisco Settlement Agreement that required closure of the Exide facility. The adjacent J Parcel is being purchased by the City for future development following remediation by Exide under a Texas Commission on Environmental Quality (TCEQ) Voluntary Cleanup Program (VCP) application.

The primary contaminants of concern (COCs) at the former Exide facility are Lead (Pb), Cadmium (Cd), Arsenic (As), and Selenium (Se), all of which are associated with Exide's former battery recycling and disposal activities. There are a number of secondary COCs that are normally associated with a heavy industrial facility. Within these comments the City's primary consultants, Cook-Joyce, Inc. and Southwest Geoscience are identified as CJI and SWG.

Exide's Bowtie APAR is fundamentally flawed in at least two critical areas. One, the APAR does not discuss or delineate the offsite impacts in Stewart Creek as is required for any such APAR. Second, the APAR is based on the assumption that only Class 3 groundwater is present under the

former operating facility when all available data indicates that Class 2 groundwater is present under much of the former operating facility.

There are also other problems with the APAR, all of which will be detailed in this submittal. However, the mischaracterization of the groundwater leads Exide to determine that only limited remediation of the area is necessary for final RCRA closure. This mischaracterization is achieved by excluding certain relevant groundwater data and mischaracterizing other data. In regard to the off-site impacts on Stewart Creek, historic releases documented in the Exide operating record are explicitly ignored to avoid recognizing historic and current off-site impacts, generally in the form of Pb contaminated battery chips and furnace slag. An analysis of the overall Bowtie contamination/remediation situation in the form the Declaration of Wade Wheatley, P.E. in the Exide bankruptcy proceeding is included herein as Attachment A.

Off-site impacts

It is a fundamental fact that an APAR must examine all affected property, both on-site and off-site. Section 1.2.5 of the APAR states: "An affected property is defined as the entire area which contains releases of COCs at concentrations equal to or greater than the assessment level applicable for groundwater classification and residential land use (30 TAC 350.4(a)(1))." The Stewart Creek area downstream of the former Exide facility explicitly fits within this definition, but was not examined in the APAR.

Over forty years of off-site releases have been documented in the regulatory record of the former Exide facility. Much of this documentation is included in the APAR Chronology. See also Page 4 of 22 in Table 1C for the 1993 TWC investigation documenting a long history of contaminant releases into Stewart Creek. The overall Exide operating record documents a long history of off-site releases into Stewart Creek. It is no wonder that extensive contamination of Stewart Creek has also been documented by the City's consultants. See Attachment B, which is data from SWG. Some of that contamination is present at hazardous levels. Much of this data was available to Exide prior to submission of the APAR.

Groundwater Characterization

A detailed analysis of the groundwater characterization issue is included herein as Attachment C in the form of a letter from CJI and SWG. Exide's current groundwater data is fundamentally flawed because the site groundwater investigation wells were not properly developed as part of the well installation process. The improper well development was observed by SWG during the J Parcel groundwater investigation. Exide was advised of the well development problems, which were resolved on the J Parcel, but based on well development documentation in the APAR they chose not to correct the problems during development on the Bowtie parcel. SWG was not able to observe the Bowtie well development because Exide refused access to the City. However, the Bowtie well

development data closely matches that of the initial methods observed on the J Parcel and, therefore, clearly indicates improper well development.

Even with the improper well development, current Bowtie groundwater data indicates a number of wells exceed the Class 2 well yield threshold. Historic data clearly demonstrates that the Class 2 well yield threshold is exceeded at the site. In fact, groundwater flow in the area of the on-site Class 2 landfill was such that dewatering wells were required during construction. This condition would not exist if this were a Class 3 groundwater bearing unit.

Subsurface flow into the French drain between the former operating plant and Stewart Creek indicates that there is significant groundwater flow from the site towards Stewart Creek. The City also notes that water from the French drain has shown high levels of contamination in the past. This and other historic groundwater data indicates that Stewart Creek is a groundwater receiving stream in this area. See Section 1.3.2 & 1.3.3 of the APAR. Such would not be the case if the groundwater unit beneath the former Exide facility is a Class 3 groundwater resource.

A key part of the Exide groundwater classification argument is that the hydrogeology of the groundwater bearing unit (GWBU) consists of disconnected areas of highly permeable sand and gravel. See Section 6.2.2 of Appendix 7 Updated Groundwater Resource Classification Evaluation. The City notes that Exide provides very convoluted cross sections in the APAR to support this argument. These cross sections defy common sense and normally accepted professional practice. Prior to submission of the APAR, the City provided Exide with accurate cross sections which demonstrate the continuous nature of the subsurface hydrogeology. Exide chose not to include these accurate cross sections in the APAR since they undercut the basic technical assumption for Exide's convoluted regulatory argument for a Class 3 groundwater designation. Those cross sections are included in Attachment C.

Exide has omitted important groundwater data and mischaracterized other data to try and justify Class 3 groundwater. Exide further mischaracterizes nearby future land use to justify its assertion that there are limited human health exposure pathways. See Section 2.6 of the APAR. Exide knows the adjacent and downstream areas will be public parks and commercial development. The City's Grand Park will be only a few hundred feet downstream. The adjacent J Parcel will be developed as campus style office and shopping.

Since the hard data does not support a Class 3 groundwater designation, Exide uses a strained regulatory interpretation to justify a Class 3 designation. See Appendix 7, section 6.2.2 of the APAR. The City has asked Exide and TCEQ staff to provide even a single example where TCEQ has endorsed a similar regulatory interpretation in the past. Neither Exide nor TCEQ has been able to cite a single example. The City has examined TCEQ files and likewise has been unable to locate a single example. The reason such an example does not exist is because Exide's regulatory interpretation is legally flawed and is not supported by the available data.

Why is the groundwater classification important since it is unlikely groundwater under the former Exide facility will ever be used by the public? Because a Class 3 groundwater designation by TCEQ would result in Exide being able to remediate soil Pb and Cd contamination at a much higher level than is appropriate for this site and that would be required with a Class 2 groundwater designation. The immediate result would be residual Pb soil contamination at a 1,600 mg/kg level rather than a 275 mg/kg level. Since much of this surface soil is in the floodplain, the ultimate result would be continuing contamination of Stewart Creek in the Grand Parks area. We note the APAR indicates that no future runoff controls are necessary to prevent just such future downstream contamination. See Section 2.6.2 of the APAR. This particular Exide statement is ridiculous on its face.

Other Issues

There are many other general and specific problems with the APAR. Listed below are short bullet points identifying some of these problems.

- The APAR does not identify and discuss all likely subsurface contaminant preferential pathways, such as the filled original Stewart Creek channel under the former plant area. While Section 3.2.5 states that utilities under the former plant area do not act as preferential pathways, available data indicates otherwise. TCEQ verified in 2010 the underplant stormwater drainpipe is acting as a preferential pathway for Pb contaminated groundwater and/or leaking contaminated stormwater (with related soil contamination as high as 39,800 mg/kg total Pb and 127mg/l TCLP Pb.)
- Data from the March 28, 2011 W & M Report, *Suspect Slag Sampling Report-Stewart Creek West Segment*, should be fully evaluated in the APAR since it identified significant amounts of slag in the creekbed adjacent to the former plant site.
- The APAR PCL development is incomplete without appropriate delineation of impacts to all contaminated media, including downstream Stewart Creek sediments.
- Based on available data, additional soil delineation is indicated for the Crystallizer plant area, the Battery Breaker area, the Flood Wall facility side area, and the Stewart Creek corridor near the former plant.
- Page vi of the Executive Summary incorrectly states under actual land use that no off-site property is affected.
- Page vi of the Executive Summary incorrectly states under land use for PCL determination that no off-site property is affected.
- Page vi of the Executive Summary incorrectly states that the upper groundwater bearing unit is Class 3.
- Page vi of the Executive Summary incorrectly states that off-site media has not been sampled.
- The Chronology section verifies many instances of past on-site and off-site contamination, but much of this data is ignored in the rest of the APAR. The most blatant of these omissions is the lack of discussion of past hazardous waste disposal in the on-site Class 2

non-hazardous landfill. This intentional omission of a long record of regulatory non-compliance by Exide results in an ultimate APAR recommendation that only limited remediation of the former Exide facility is required.

- The on-site Class 2 non-hazardous waste landfill is briefly mentioned on pages 1-3, 1-6, 1-7, 1-8 of the APAR, but the APAR never examines in detail the past use of this landfill for hazardous waste disposal. Table 1A indicates there have been no releases from the landfill, but this is incorrect given the high Se level detected in the nearby groundwater monitoring well which indicates the landfill is contaminating groundwater in the immediate area. Exide's on-site Class 2 landfill is, in effect, an unpermitted hazardous waste landfill. No further material should be allowed in this landfill until the hazardous waste is completely removed or otherwise controlled in a regulatorily compliant manner. The APAR should have included such a discussion and recommendation.
- Table 1C indicates TCEQ requested TCLP sampling on any area where waste was deposited after July 6, 1982 (to determine if the waste is characteristically hazardous), but the Comments section incorrectly states that "No specific areas for TCLP sampling were identified during APAR investigation." The City has repeatedly requested random TCLP testing of the Bowtie soil samples, but Exide has refused to undertake such testing even though some J Parcel soil samples tested TCLP hazardous.
- Page 1-17 states that "groundwater flow within the upper GWBU at the Site is strongly controlled by topography and that groundwater discharges to the on-site creeks." This statement, while accurate, is directly contrary to Exide's assertion that this is a Class 3 Groundwater Bearing Unit.
- Page 1-18 states that "Although staff gauges were not installed in the North Tributary, the groundwater potentiometric contours in the vicinity of the North Tributary on Figures 5A.1 through 5A.3 suggest that it is also a gaining stream." This statement, while accurate, is directly contrary to Exide's assertion that this is a Class 3 GWBU.
- Figure 1A-2 documents that much of the Bowtie contaminated soil area is within the floodplain. This exhibit refutes Exide's claim that limited, or no, post remediation surface water controls are necessary.
- Figure 1B should include all of Stewart Creek downstream of the former Exide facility on the Affected Property Map.
- Figure 2B does not show a number of nearby potential receptors such as the Railroad Museum, Discovery Center, and Grand Park.
- Page 2B-18 states that Stewart Creek downstream of the former Exide facility "runs through undeveloped land until it discharges into Lake Lewisville." Exide is fully aware that this statement is false. There is significant residential development downstream and the Grand Park project will be immediately downstream.
- Page 3-10, Section 3.3.4 discusses Stewart Creek sediment sampling, but intentionally omits the downstream sediment sampling data developed by SWG.

- Page 4.2, Section 4.2.1 references slag fill beneath the Battery Receiving/Storage Building (which is likely hazardous), but does not investigate this slag as a source of future groundwater contamination.
- Page 4-4 improperly characterizes MW-27 as "near and downgradient" of the Raw Materials Storage Building. MW-27 is located 250 feet southeast of the Raw Materials Storage Building and, according to the APAR's potentiometric surface maps, is not downgradient.
- Page 4.9, Section 4.2.6 indicates MW-30 was used for vertical delineation of the soil column beneath the Battery Breaker Building, but does not include soil sampling of the identified slag/soil mix at 28.5 (below ground surface) bgs. That soil/slag mix should be tested to determine if it is hazardous.
- Table 4D.1 contains numerous inconsistencies regarding the actual sample dat on the lab summaries compared to the APAR soil data summaries.
- The final statement on page 7-2 acknowledges downstream contamination of Stewart Creek from the former Exide facility, but asserts that discussion of that issue is outside the scope of this APAR. That statement is absolutely wrong. By regulation, discussion of that issue must be included in this APAR.
- The Section 9.0 Ecological Risk Assessment (SLERA) is fundamentally flawed. That issue was discussed by the City in its prior SLERA comments. A copy of those comments is included herein as Attachment D.

Conclusion

The Exide's Affected Property Assessment Report, Former Operating Plant, Frisco Recycling Center, Frisco, Collin County, Texas (Agreed Order Docket No. 2011-1712-IHW-E) does not meet the basic regulatory requirements for an APAR. It contains incomplete and intentionally misleading data. The APAR should be rejected in its entirety and Exide should be cited for not timely submitting an APAR in accordance with Agreed Order Docket No. 2011-1712-IHW-E.

Respectfully submitted,

Kerry E. Russell
Attorney for the City of Frisco

Cc: Mr. George Purefoy
Mr. Bruce Cole

Attachment A

IN THE UNITED STATES BANKRUPTCY COURT
FOR THE DISTRICT OF DELAWARE

IN RE:	§	Case No. 13-11482 -KJC
	§	Chapter 11
EXIDE TECHNOLOGIES	§	
	§	Final Hearing: July 24, 2013 at 10:00 a.m.
Debtor.	§	Relates to Dkt. 17 and 79

DECLARATION OF WADE M. WHEATLEY, P.E. IN SUPPORT OF THE JOINDER BY THE CITY OF FRISCO, TEXAS IN THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S OBJECTION TO DEBTOR'S MOTION FOR INTERIM AND FINAL ORDERS (I) AUTHORIZING DEBTOR (A) TO OBTAIN POST-PETITION FINANCING PURSUANT TO 11 U.S.C. §§ 105, 361, 362, 364(c)(1), 364(c)(2), 364(c)(3), 364(d)(1), AND 364(e) AND (B) TO UTILIZE CASH COLLATERAL PURSUANT TO 11 U.S.C. § 363, (II) GRANTING ADEQUATE PROTECTION TO PRE-PETITION SECURED PARTIES PURSUANT TO 11 U.S.C. §§ 361, 362, 363 AND 364 AND (III) SCHEDULING FINAL HEARING PURSUANT TO BANKRUPTCY RULES 4001(b) AND (c)

I, Wade M. Wheatley, P.E., hereby declare, pursuant to 28 U.S.C. § 1746, under penalty of perjury that:

1. My name is Wade M. Wheatley. I am licensed as a Professional Engineer by the State of Texas (P.E. No. 76710) and I am a Principal and Vice President with Cook-Joyce, Inc (CJI). I am over the age of twenty-one and am competent and otherwise qualified to make this Declaration.

2. CJI has been retained by the legal firm of Russell and Rodriguez to provide environmental engineering and consulting services on behalf of the City of Frisco, a party in interest in this bankruptcy case, in matters relating to the environmental impacts from and appropriate response actions to the operation of the Exide Recycling Center in Frisco, Texas. I am CJI's Project Manager for the City of Frisco project being performed under contract to Russell and Rodriguez.

3. CJI is an Austin, Texas-based environmental engineering consulting firm founded

Attachment A

in March 1983. CJI offers a broad spectrum of environmental services in the areas of solid and hazardous waste, radioactive waste, water and wastewater, air quality, pollution prevention, environmental assessment, regulatory liaison, and remediation technology. Our multidisciplinary team is composed of professionals with education and experience in chemical, civil and environmental engineering; geology; environmental sciences; air quality; and surface and groundwater hydrology. CJI, its staff members, and I are familiar with the requirements of the Resource Conservation and Recovery Act (RCRA), the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and the laws of the State of Texas relating to environmental regulation. My resume and the resumes of other CJI personnel assigned to this project are provided in Exhibit 1. I have personal knowledge of the facts set forth herein and they are true and correct.

4. I have personally visited the site as has at least one of my staff and other professional consulting staff working with the City of Frisco on this site with whom I have discussed their personal observations and findings. I have been participating in the meetings regarding the corrective actions at this facility between Exide and the Texas Commission on Environmental Quality (TCEQ), and I and CJI staff members (see Exhibit 1) have personally reviewed the reports and other documentation provided by Exide as well as the records of the TCEQ. True and correct copies of both my resume and the resumes of the CJI staff members who have participated in this project are attached hereto as Exhibit 1. Below are my opinions, conclusions, and mental impressions based on my review of the reports, studies, data, and other documentation created by others, the permits and orders issued by various governmental entities, the information I have received from personal observations at the site and meeting with Exide personnel, and data collected and analyzed by CJI and its staff.

SITE BACKGROUND

5. Manufacturing operations at the site of the Exide Recycling Center in Frisco, Texas

(Exide) began in 1964 when the property was initially developed as a lead oxide manufacturing facility. Battery recycling operations began at the facility in 1969 and continued until the facility ceased operations in November 2012. The Exide facility is constructed over the former channel of Stewart Creek and a tributary to the north. Currently, Stewart Creek is adjacent to the southern side of the facility, and the northern tributary of Stewart Creek is located immediately to the north of the facility. Two structures, a stormwater retention pond and the facility's wastewater treatment plant, are located across Stewart Creek from the facility and connected by piping that crosses the creek.

6. The facility recycled large batteries (such as auto and marine batteries) by breaking them in a water bath. Plastic and rubber "chips" from the broken battery casings floated to the surface of the water where they were collected for disposal. Liquid from the batteries mixed with the water, which would eventually be treated either in the facility's wastewater treatment plant or nearby publically owned treatment works (POTWs), such as the City of Frisco's adjacent Stewart Creek Wastewater Treatment Plant. This Wastewater Treatment Plant is in the process of being closed under the State supervised Voluntary Cleanup Program (VCP) to remediate contaminates that originated from the Exide operations. Metal from the batteries sank to the bottom of the bath, where it was collected. The metal was then re-smelted to recover lead and smaller amounts of other valuable metals. The smelting process produced three waste streams: slag, dust control water, and dust (most of which was captured in baghouses).

CONTAMINATION OF SITE AND SURROUNDING AREA

7. The waste streams produced at the Exide facility have resulted in widespread contamination of the site and surrounding area, and multiple state and federal environmental enforcement actions have been taken at the facility. Since 2010, the Texas Commission on Environmental Quality (TCEQ) has issued three Agreed Orders to the facility (Docket #2011-1712-

IHW-E for improper waste management; Docket #2011-0521-MIS for excessive discharges of lead particulate to the atmosphere; and Docket #2010-1818-IWD-E for unmonitored wastewater discharges to Stewart Creek). It is also under a United States Environmental Protection Agency (EPA) Administrative Order on Consent (RCRA 06-2012-0966) for improper waste management practices.

8. As discussed above, the Exide facility is constructed, in part, over the historic stream channel for Stewart Creek and the northern tributary. Boring logs (soil lithology records) indicate that slag, battery chips, and soil have been used as fill material under the facility. The deepest report of battery chips and slag is at a depth of 28.5 feet below grade in MW-30. Based on soil sample results provided in the 7/10/2013 Affected Property Assessment Report[1] (APAR), almost the entire surface of the Exide facility is contaminated with lead. Exceptions to that include the eastern edge of the facility and the Battery Receiving/Storage Building area, which is the westernmost building in the main portion of the facility. Although the near-surface soils aren't contaminated under the Battery Receiving/Storage Building and surrounding area, significant contamination is present from 4 to 10 feet below grade in that area.

9. In the 7/10/2013 APAR, Pastor, Behling & Wheeler, LLC (PBW) concluded that groundwater at the site is not impacted. However, as discussed below, that conclusion is based in part on the characterization of the uppermost groundwater bearing unit as a "Class 3" groundwater resource.[2] It is my opinion that a "Class 3" designation is unsubstantiated and technically incorrect based on currently available information which clearly indicates that the groundwater is a "Class 2"

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[1] *Affected Property Assessment Report, Former Operating Plant, Frisco Recycling Center, Frisco, Collin County, Texas*, Pastor, Behling & Wheeler, LLC, dated July 10, 2013.

[2] Under applicable TCEQ regulations, Class 3 groundwater resources are not considered usable as drinking water, while Class 2 groundwater resources are considered usable, or potentially usable, drinking water supplies.

resource.

On-Site Landfills

10. There are several landfills located on the Exide property (7/10/2013 APAR) which represent areas of environmental concern and pose potential threats to public health and safety. I have evaluated potential remedies to address areas of environmental concern associated with the operation of the Exide facility, including the on-site landfills, which include the potential excavation of waste and contaminated environmental media present above environmental action levels that will be protective of human health and the environment.

11. As discussed below, the majority of the materials from these landfills would likely meet the definition of hazardous waste under the RCRA if the materials were to be exhumed and actively managed. As such, these exhumed materials would have to be managed in accordance with applicable RCRA regulations.

a. The **Class 2 Landfill** is a post-RCRA landfill[3] that is currently approximately 8.5 acres in size and 30 feet deep. It was used from 1996 to the present date for the disposal of slag. It currently holds approximately 116,500 cubic yards of waste. There are also two waste piles that contain several thousand cubic yards of slag in the active area of the landfill. The untreated slag is hazardous waste, and TCEQ has analytical data for samples of the waste collected from the landfill documenting and confirming inadequate treatment to remove the hazardous characteristics of the waste. Additionally, Exide cannot document that any treatment performed to remove the hazardous characteristics of the slag was sufficient to meet the regulatory treatment

[3] The term, "post-RCRA landfill" indicates that the landfill was constructed and operated after the effective date of the RCRA hazardous waste regulations.

standards prior to land disposal. Based on this information, it has been demonstrated that a portion of the waste in the Class 2 landfill is improperly treated hazardous waste that did not meet RCRA treatment standards prior to disposal.[4]

b. The **Slag Landfill** is a pre-RCRA landfill[5] that remained active after the effective date of RCRA. It is approximately 3.5 acres in size and its depth is unknown. It was used for the disposal of slag from 1978 to 1996, when it was capped and closed. Slag disposed in this unit prior to May 8, 1990 was not required to be treated; after this date, RCRA regulations required treatment of the slag to render it non-hazardous. There is limited information available regarding the treatment, if any, the slag interred in this landfill received. However, untreated and improperly treated slag from this facility has been determined to be a hazardous waste under current regulations, and improperly treated slag has been identified in the Class 2 landfill that was used for slag disposal after this landfill was capped.

c. The **North Disposal Area (NDA)** is a pre-RCRA landfill that is approximately 5.5 acres in size and 13-15 feet deep. It was used from 1974 to 1978 for the disposal of slag, battery chips, and municipal solid waste (MSW) from the City of Frisco. Based on the environmental statutes and regulations in place at the time the landfill was

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[4] The Hazardous and Solid Waste Amendments of 1984 (HSWA) established EPA's authority for the Land Disposal Restriction program under RCRA. This program requires treatment of hazardous waste before disposing of the waste on the land. To ensure proper treatment, EPA establishes a treatment standard for each type of hazardous waste to substantially diminish the toxicity of a waste or otherwise restrict the potential for release of toxic materials to the environment. Beginning on May 8, 1990, metal-bearing hazardous wastes such as the slag from the Exide facility were required to be treated to achieve non-hazardous levels prior to land disposal. These standards were replaced, effective August 24, 1998, with more stringent, technology-based standards for treatment of metal-containing hazardous wastes prior to land disposal.

[5] The term, "pre-RCRA landfill" indicates a landfill that was constructed and operated before the effective date of the RCRA hazardous waste regulations.

active, the slag would not have required treatment prior to disposal in this unit. However, under current standards, untreated slag from this facility would meet the RCRA definition of a hazardous waste.

d. The **South Disposal Area (SDA)** is a pre-RCRA landfill that is approximately 1 acre in size and 8 feet deep. It was used for the disposal of slag and battery chips from 1969 to 1974, when it was capped and closed. Based on the environmental statutes and regulations in place at the time the landfill was active, the slag would not have required treatment prior to disposal in this unit. However, under current standards, untreated slag from this facility would meet the RCRA definition of hazardous waste.

Stewart Creek

12. Sections of Stewart Creek have previously been dredged to remove slag and/or lead contaminated sediment - initially in 1986[6] and again in 1999[7]. A closed waste pile consisting of sediment dredged from the creek in 1986 is still present on-site. Stewart Creek was identified as a Solid Waste Management Unit (SWMU) at the former Exide facility in 1991[8]. More recently, lead contaminated sediment or soil has been reported in or adjacent to Stewart Creek in the following locations:

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[6] *Water and Sediment Tests, GNB Lead Plant, Frisco, Texas*, prepared by Southwestern Laboratories (SWL) dated February 21, 1986; *Stream Sediment Samples, GNB, Inc. Plant, Frisco, Texas*, prepared by SWL dated May 21, 1986; *Stream Sediment Test, GNB, Inc. Plant, Frisco, Texas*, prepared by SWL dated June 13, 1986; and *Stream Sediment Tests, GNB, Inc. Plant, Frisco, Texas*, prepared by SWL dated July 29, 1986.

[7] *Stewart Creek Corrective Measures Implementation Report (CMI)*, JDC Consulting, Inc., dated July 13, 2000.

[8] *RCRA Facility Investigation (RFI), GNB Incorporated, Frisco, Texas*, Lake Engineering, dated May 8, 1991.

- On Exide property as reported by the TCEQ[9] and the United States EPA[10].
- Immediately downstream of the Exide facility at the former Stewart Creek Wastewater Treatment Plant (SCWTP)[11] and on the Grand Park property, which is located slightly farther downstream (Exhibit 2). The SCWTP itself was previously remediated to abate soil contamination caused by receipt of wastewater with a high lead content from Exide.

Upland Areas and Adjacent Properties

13. Shallow soil contamination primarily resulting from airborne deposition of lead particulate extends over more than 20 acres of Exide "buffer property" that surrounds the Recycling Facility. Most of this soil contamination is less than 1 foot deep, and some is present in heavily wooded areas. Additionally, slag and battery chips from the Exide facility have been used for fill, soil stabilization, and erosion control on a number of properties in the area., including Bicentennial Park and an adjacent area to the north of Bicentennial Park in the early 1990s.

Groundwater Classification

14. As part of the investigation of their facility, Exide has claimed that the shallow groundwater under their property and in the near vicinity is non-potable and unusable (a "Class 3 groundwater resource"). However, based on technical data gathered from the site, including analytical data and yield tests, I have concluded that existing information indicates the uppermost groundwater

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[9] *Texas Commission on Environmental Quality Investigation Report, Exide Technologies, Exide Frisco, Battery Recycling Plant, Investigation #880260, CN600129787, RN100218643,* dated September 9, 2011.

[10] *Corrective Action Inspection, Exide Technologies, 7471 South 5th Street, Frisco, TX 75034, TXD0064510920,* United States Environmental Protection Agency, dated January 12, 2011.

[11] *Affected Property Assessment Report, Former Stewart Creek Wastewater Treatment Plant (VCP ID No. 212), Frisco, Texas,* Pastor, Behling & Wheeler, LLC, dated April 1, 2013.

is a "Class 2 groundwater resource." This information includes data collected by a previous consultant for Exide that the relevant groundwater bearing zone yields large amounts of groundwater in certain locations[12]. In fact, the groundwater production data resulted in the consultant's recommendation to use two dewatering wells during the construction and filling of Cell 1 in the Class 2 Landfill. Further, Exide's current consulting firm also documented that monitoring well B5N yielded groundwater at a Class 2 level over a 48 hour pumping test performed in March 2013. The TCEQ has not issued a final acceptance of Exide's contention that the groundwater beneath the site is Class 3.

15. Based on meetings with Exide personnel which I have attended as well as the recently submitted APAR, filed with the TCEQ on 7/10/2013, and Screening Level Ecological Risk Assessment (SLERA), filed with the TCEQ on 5/10/2013 and 7/10/2013, Exide is operating under the assumption that a Class 3 groundwater designation will be approved and, as a result, that remedial action levels for soils at the site will be less stringent (in most cases, soil action levels based on Class 3 groundwater would be 100 times the levels that would be required for Class 2 groundwater). For example, in the case of lead in subsurface soil (greater than 5 feet deep), Class 3 groundwater results in a soil action level of 27,451 milligrams per Kilogram (mg/Kg); Class 2 groundwater results in an action level of 274.51 mg/Kg (Exhibit 3). It is my opinion that existing information clearly demonstrates the groundwater at the site is Class 2 and significantly more stringent action levels are therefore appropriate and necessary.

16. Use of action levels for site soils based on a Class 2 groundwater designation would have a significant impact on the amount of waste that would need to be removed or properly contained and controlled on-site, thereby significantly increasing the costs to properly remediate the site.

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[12] *Notification of an On-Site Class II Industrial Waste Landfill, GNB Class II Industrial Landfill, Frisco, Texas,* by Jones & Neuse, Inc., dated September 1995.

17. In addition to affecting action levels for soils, the Class 2 versus Class 3 groundwater designation also impacts action levels for groundwater. Groundwater in a landfill monitoring well (LMW-9) contains selenium concentrations in excess of its Class 2 action level but not the Class 3 action level. In addition, existing data indicate that water encountered in subsurface borings has been impacted, as described below. Obviously, if action levels for groundwater are based on Class 2 versus Class 3 groundwater (as is technically accurate based on existing information), then a response action would be required at the LMW-9 location and potentially at other locations within the former operating area.

UNKNOWN CONDITIONS

18. Unknown conditions, such as unidentified disposal areas or historic spill sites that were not adequately remediated, may also be present that could increase the scope, urgency, and immediacy of any clean up of the site and surrounding area.

Groundwater Contamination

19. Although PBW concluded that there is no groundwater contamination at the Exide Recycling Facility (because PBW concluded the upper most groundwater should be characterized as Class 3 and that the shallow groundwater encountered in the borings is not groundwater), they collected samples of water that began filling shallow boreholes while they were being completed. These borings varied in depth from 2.5 feet to 12 feet below grade. Lead concentrations in 3 of the 5 samples exceed the Class 2 groundwater action level, and the lead in 1 of those samples exceeds the Class 3 groundwater action level. Cadmium concentrations in 2 of the 5 samples exceed the Class 2 action level as well (Exhibit 4).

20. The samples were turbid because they were collected from open boreholes, which lack the sand pack and slotted piping that allow wells to produce clear, non-turbid water. The large

amounts of suspended solids in the samples allowed PBW to argue that sample analytical results were not comparable to groundwater action levels required by rule. Therefore any comparison to action levels is qualitative versus quantitative. But these data suggest that groundwater beneath the facility is contaminated and would need to be addressed to properly remediate the site.

Stewart Creek

21. As shown in Exhibit 5, Stewart Creek flows into Lake Lewisville, a major source of public water supply to the area. As a follow-up to 2011 downstream sampling in Stewart Creek (Exhibit 4), a recent survey of the creek by Southwest Geoscience confirmed that there are pieces of slag and battery chips from the Exide facility in or along the creek several miles downstream of the Exide Recycling Facility (Exhibit 5). Southwest Geoscience subsequently collected additional sediment samples in those areas where these wastes were observed.

22. Based on preliminary reports, some of the visually impacted downstream locations have lead impacts that will require remediation. However, Southwest Geoscience has not completed their review of those data and has not released them to CJI or the City of Frisco for additional evaluation. However, the requirements for off-site remediation, that is, remediation on property not owned by either the City of Frisco or Exide, could increase remediation costs significantly. Preliminary Stewart Creek remediation cost estimates are provided in Exhibit 8.

REGULATORY OPTIONS FOR SITE AND AREA REMEDIATION

Federal and State Requirements

23. In 1984, through the Federal rule making process, the Environmental Protection Agency (EPA) determined that the hazardous waste rules adopted by the State of Texas were substantially equivalent to Federal requirements and adopted 40 CFR 272.2201 which provided final authorizations for the State of Texas to implement the requirements Subchapter C of the Resource

Conservation and Recovery Act (RCRA C).

24. Specific rules adopted by the State of Texas that meet the federal requirements that enabled state authorization of the federal hazardous waste rules include 30 TAC §335.2, Permit Required, which states in part that no person may cause, suffer, allow, or permit any activity of storage, processing, or disposal of any industrial solid waste or municipal hazardous waste unless such activity is authorized by a solid waste permit, unless an exemption or other valid authorization is obtained from the Commission.

Corrective Action Recommendation

25. In determining the lowest cost and least burdensome mechanism to achieve regulatory compliance, I have determined that the Class 2 landfill should be closed under a Post Closure Care Order as authorized by 30 TAC 305 subchapter C. And the RCRA permit should be modified to create a Corrective Action Management Unit (CAMU) within the current RCRA permit boundary to manage the corrective action residuals that will be generated from the cleanup of the remainder of the property, including the wastes that will be generated from the cleanup of Stewart Creek.

TECHNICAL OPTIONS FOR SITE AND AREA REMEDIATION

Low Cost Solution – Close in Place Option with Targeted Remediation

26. This cleanup option calls for the removal of waste/contaminated soil from areas that can be "rehabilitated" in a cost effective manner. Essentially these areas are the contaminated portions of the site that aren't already landfills or, in the case of the former Exide Recycling Facility, highly contaminated. The "rehabilitation" areas include the J Parcel (buffer property surrounding the Exide operating facility which is proposed to be purchased by the City of Frisco), Stewart Creek, and peripheral portions of the "Bowtie" (so named due to its physical configuration) property (the Lake Parcel, the South Field, the South Wooded Area, the North Wooded Area, and the area near the

crystallizer building). Exhibit 6 depicts the locations where excavations would occur.

27. Waste removed from the areas identified above will be consolidated in areas that are already landfills or within the former Exide Recycling Facility. The consolidation areas (the Class 2 landfill, the South Disposal Area, and the contiguous Exide Recycling Facility/North Disposal Area/Slag Landfill) would then be contained with slurry walls and capped to limit access to and migration of the waste.

28. Approximately 1 mile of slurry wall would be installed around the three areas mentioned above providing a vertical barrier to prevent lateral migration of waste constituents to off-site properties, including Stewart Creek. The slurry walls would be installed vertically from the ground surface and be keyed into the shale formation that underlies the Exide property and provides horizontal containment beneath the wastes and contaminated soils to prevent downward migration of wastes. After each area is encircled with a slurry wall, the entire surface area within and including the slurry wall will be capped with a flexible membrane liner (FML), three feet of compacted, low permeability clay, and additional fill as necessary to achieve positive long-term drainage of surface water falling onto and running across each area. In all, the combined surface area that would be capped is approximately 40 acres in size. Topsoil would be placed on top of the cap and vegetated to control erosion.

29. In a preliminary evaluation, I have concluded that this effort will take considerably less time to complete than a full scale excavation and disposal effort. The estimated cost for this effort, based on currently available information, is approximately $15,000,000.

Probable Cost Solution – More Complex Close in Place Option with Targeted Remediation

30. The probable cost solution is simply a modification of the low cost solution. There are numerous variables that could complicate, delay, and/or increase the costs of the close in place

strategy. Those uncertainties include litigation, inclement weather, potential remediation in and adjacent to Stewart Creek downstream of the site, and similar issues. To account for those uncertainties, the probable cost of the close in place option is 1.5 times the low cost, or $22,500,000.

High Cost Solution – Excavation, Removal, and Disposal of Waste/Contaminated Media

31. This cleanup option calls for the removal of all waste and media contaminated at concentrations above action levels based on Class 2 groundwater from the "Bowtie" and Class 2 Landfill properties, and removal of soil impacted above the negotiated cleanup value for lead of 250 mg/Kg on Exide buffer property (the "J Parcel") and the "Lake Parcel" portion of the Bowtie property (which the City of Frisco has an option to purchase). Exhibit 7 depicts the locations where excavations will occur.

32. In a preliminary evaluation, I have concluded that this effort will likely take several years to complete and will generate between 615,000 and 760,000 cubic yards of waste, with almost half of that total being hazardous waste. The estimated cost to complete a remedial excavation of this magnitude is in excess of $130.0 million dollars.

A summary of the remediation and closure estimates is provided as Exhibit 8.

Stewart Creek Remediation

33. Several remediation scenarios have been prepared for downstream segments of Stewart Creek by Southwest Geoscience, another consulting firm working on behalf of the City of Frisco. The remediation scenarios were based on the following:

a. The complete removal of stream sediments along a 1.87 mile segment of the Creek. The estimated cost to complete this remediation scenario is approximately $3.4 million.

b. The complete removal of stream sediments along a 0.75 mile segment of Stewart

Creek plus the removal of hot spots outside of this area. The estimated cost to complete this remediation scenario is approximately $2 million.

c. The targeted removal of hot spots on the creek. The estimated cost to complete this remediation scenario is approximately $1.85 million.

The actual remediation scenario will be determined by future testing of stream sediment to determine more precisely levels and extent of contamination.

Dated: July 19, 2013.

Wade M. Wheatley, P.E.

Attachment B

TABLE 1A
SEDIMENT ANALYTICAL RESULTS
Stewart Creek East and West of the Dallas North Tollway
Frisco, Texas

Sample I.D.	Sample Date	Depth (feet)	Arsenic (mg/Kg)	Cadmium (mg/Kg)	Lead (mg/Kg)	Total Organic Carbon (mg/Kg)	Selenium (mg/Kg)	Sulfate (mg/Kg)
TRRP Ecological Benchmarks for Sediment			9.79	0.99	35.8	NE	NE	NE
TCEQ Second Effects Levels for Sediment			33	4.98	128	NE	NE	NE
TRRP Human Health Sediment Protective Concentration Levels			110	1,100	500	NE	2,700	NE
SC-SED-1	11/18/11	0-0.5	11.9	0.61	38.2	N/A	<1.09	39.3
SC-SED-2	11/18/11	0-0.5	11.2	0.75	46.9	N/A	<1.15	87.8
SC-SED-3	11/18/11	0-0.5	18.6	2.01	63.8	N/A	<1.06	85.5
SC-SED-4	11/18/11	0-0.5	12.0	0.95	39.1	N/A	<1.09	69.8
SC-SED-5	11/17/11	0-0.5	14.4	0.90	397	N/A	<1.20	241
SC-SED-6	11/17/11	0-0.5	16.2	1.05	307	N/A	<1.08	55.0
SC-SED-7	11/17/11	0-0.5	16.1	0.54	35.6	N/A	<1.07	60.2
SC-SED-8	11/17/11	0-0.5	47.2	0.96	35.2	N/A	<1.10	52.7
SC-SED-9	11/17/11	0-0.5	20.5	4.16	162	N/A	<1.06	43.1
SC-SED-10	11/17/11	0-0.5	12.3	0.72	22.5	N/A	<1.01	45.0
SC-SED-11	11/17/11	0-0.5	29.4	1.11	46.8	N/A	<1.02	38.2
SC-SED-12	11/18/11	0-0.5	11.3	0.79	56.7	N/A	<1.26	172
SC-SED-13	11/18/11	0-0.5	31.1	0.84	33.7	N/A	<1.00	58.3
SC-SED-14	11/18/11	0-0.5	12.7	0.79	27.7	N/A	<0.97	48.2
SC-SED-15	11/18/11	0-0.5	12.9	1.54	35.3	N/A	<1.01	58.0
SC-SED-16	11/18/11	0-0.5	14.6	1.49	59.0	N/A	<1.00	35.6
SC-SED-17	11/18/11	0-0.5	18.3	1.19	43.1	N/A	<0.97	40.2
SC-SED-18	11/18/11	0-0.5	8.10	0.43	20.5	N/A	<0.91	190
SC-SED-19	11/18/11	0-0.5	19.5	1.47	37.6	N/A	<1.18	93.0
SC-SED-20	11/18/11	0-0.5	17.4	1.07	38.5	N/A	<1.03	54.2
SC-SED-21	11/18/11	0-0.5	18.0	2.19	49.5	N/A	<0.96	31.0
SC-SED-22	11/18/11	0-0.5	19.2	2.01	53.2	N/A	<0.93	78.5
SC-SED-23	11/18/11	0-0.5	16.1	3.69	34.2	N/A	<1.15	190
SC-SED-24	11/18/11	0-0.5	32.1	2.00	49.5	N/A	<1.03	39.8
SC-SED-25	11/18/11	0-0.5	15.1	1.03	21.6	N/A	<1.07	45.0
SC-SED-26	11/17/11	0-0.5	16.5	0.87	30.1	N/A	<1.07	66.3
SC-SED-27	11/17/11	0-0.5	14.3	1.09	31.8	N/A	<1.00	54.1
SC-SED-28	11/18/11	0-0.5	14.1	1.23	29.0	N/A	<0.96	63.0
SC-SED-29	11/18/11	0-0.5	18.2	1.75	35.9	N/A	<1.00	37.2
SC-SED-30	11/18/11	0-0.5	18.5	2.41	31.3	N/A	<0.98	58.9
SC-SED-31	06/12/13	0-0.5	19.2	0.38	12.7	33.0	N/A	N/A
SC-SED-32	06/12/13	0-0.5	19.3	0.64	12.3	18.7	N/A	N/A
SC-SED-33	06/12/13	0-0.5	18.5	0.42	14.6	34.3	N/A	N/A
SC-SED-34	06/12/13	0-0.5	16.0	0.67	14.3	20.1	N/A	N/A
SC-SED-35	06/12/13	0-0.5	17.8	0.45	13.0	21.9	N/A	N/A
SC-SED-36	06/12/13	0-0.5	17.7	0.61	11.5	62.8	N/A	N/A
SC-SED-37	06/12/13	0-0.5	16.2	0.57	12.1	28.6	N/A	N/A
SC-SED-38	06/12/13	0-0.5	12.7	0.33	9.7	25.8	N/A	N/A
SC-SED-39	06/12/13	0-0.5	11.6	0.47	10.6	51.1	N/A	N/A
SC-SED-40	06/12/13	0-0.5	7.0	0.16	12.9	38.4	N/A	N/A
SC-SED-41R	06/12/13	0-0.5	24.9	0.35	13.1	40.5	N/A	N/A
SC-SED-42R	06/12/13	0-0.5	10.8	0.35	8.6	32.6	N/A	N/A
SC-SED-43R	06/12/13	0-0.5	20.1	1.5	14.3	17.5	N/A	N/A
SC-SED-44	06/12/13	0-0.5	12.8	0.39	12.1	11.9	N/A	N/A
SC-SED-45	06/12/13	0-0.5	14.0	1.7	11.4	12.8	N/A	N/A
SC-SED-46	06/12/13	0-0.5	26.1	1.1	11.8	19.6	N/A	N/A
SC-SED-47	06/12/13	0-0.5	16.9	1.2	19.6	17.6	N/A	N/A
SC-SED-48	06/12/13	0-0.5	24.8	2.4	13.8	15.6	N/A	N/A
Chip (6-20)-2	06/20/13	--	14.4	0.26	19.1	N/A	N/A	N/A
Chip (6-20)-2 Base	06/20/13	--	10.6	0.62	8.2	N/A	N/A	N/A
PS-(6-21)-1 Base Comp	06/21/13	--	25.2	4.2	89.0	N/A	N/A	N/A
Chip (6-21)-1 Base Comp	06/21/13	--	17.7	0.87	13.3	N/A	N/A	N/A
PS-(6-21)-2 Base Comp	06/21/13	--	44.6	0.52	9.7	N/A	N/A	N/A
Chip (6-21)-2 Base Comp	06/21/13	--	12.3	0.54	9.5	N/A	N/A	N/A
Chip (6-24)-3 Base Comp	06/24/13	--	9.2	1.1	27.7	N/A	N/A	N/A
Chip (6-24)-3 Wall Base	06/24/13	--	8.1	0.92	15.7	N/A	N/A	N/A
Chip (6-24)-3 SED	06/24/13	--	10.4	0.79	39.3	N/A	N/A	N/A
PS (6-24)-3 Base Comp	06/24/13	--	11.8	0.82	13.6	N/A	N/A	N/A
Chip (6-24)-4 Base Comp	06/24/13	--	9.2	0.63	15.3	N/A	N/A	N/A
Chip (6-24)-5 Base Comp	06/24/13	--	8.9	0.63	76.7	N/A	N/A	N/A
Slag (6-24)-1 Base	06/24/13	--	16.4	0.56	17.8	N/A	N/A	N/A
Slag (6-24)-2 Base	06/24/13	--	27.9	<0.040	459	N/A	N/A	N/A

mg/Kg - milligrams/Kilogram

Base denotes sample was collected discretely directly beneath the Chip, Slag, or Potential Slag

Comp denotes the sample was collected as a composite from beneath the Chip, Slag, or Potential Slag, or contained multiple chips

SED denotes the sample was collected from sediment beneath the base at the water interface

Wall denotes the sample was collected furhter down the feature beneath the base but above the SED sample

(j) - Denotes an estimated value between the laboratory sample detection limit (SDL) and the laboratory method detection limit (MDL).

Shading indicates a concentration above the TRRP Ecological Benchmark for Sediment

Bold and shading indicates a concentration above the TCEQ Second Effects Level

Bold and shading indicates a concentration above the TCEQ Human Health Sediment PCLs

Benchmarks obtained from theTCEQ guidance document*Update to Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas RG-263 (Revised)*dated January 2006.

< - Not detected above laboratory SDL.

N/A - Not Applicable

NE - Not Established

Attachment B

TABLE 1B

"AS-GENERATED" WASTE (CHIP, POTENTIAL SLAG, and SLAG) AND OTHER ANALYTICAL RESULTS

Stewart Creek East and West of the Dallas North Tollway

Frisco, Texas

Sample I.D.	Sample Date	Depth (feet)	Arsenic (mg/Kg)	Cadmium (mg/Kg)	Lead (mg/Kg)	Total Organic Carbon mg/Kg	Selenium (mg/Kg)	Sulfate (mg/Kg)
TRRP Ecological Benchmarks for Sediment			**9.79**	**0.99**	**35.8**	**NE**	**NE**	**NE**
TCEQ Second Effects Levels for Sediment			**33**	**4.98**	**128**	**NE**	**NE**	**NE**
TRRP Human Health Sediment Protective Concentration Levels			**110**	**1,100**	**500**	**NE**	**2,700**	**NE**
Chip (6-20)-2	06/20/13	--	14.4	0.26	19.1	N/A	N/A	N/A
Chip (6-20)-2 Base	*06/20/13*	--	*10.6*	*0.62*	*8.2*	*N/A*	*N/A*	*N/A*
Chip (6-21)-1	06/21/13	--	8.3	0.086(j)	**180**	N/A	N/A	N/A
Chip (6-21)-1 Base Comp	*06/21/13*	--	*17.7*	*0.87*	*13.3*	*N/A*	*N/A*	*N/A*
Chip (6-21)-2	06/21/13	--	10.5	0.24	3.8	N/A	N/A	N/A
Chip (6-21)-2 Base Comp	*06/21/13*	--	*12.3*	*0.54*	*9.5*	*N/A*	*N/A*	*N/A*
Chip (6-24)-3	06/24/13	--	3.3	0.29	27.0	N/A	N/A	N/A
Chip (6-24)-3 Comp	06/24/13	--	11.5	1.4	32.6	N/A	N/A	N/A
Chip (6-24)-3 Base Comp	*06/24/13*	--	*9.2*	*1.1*	*27.7*	*N/A*	*N/A*	*N/A*
Chip (6-24)-3 Wall Base	*06/24/13*	--	*8.1*	*0.92*	*15.7*	*N/A*	*N/A*	*N/A*
Chip (6-24)-3 SED	*06/24/13*	--	*10.4*	*0.79*	*39.3*	*N/A*	*N/A*	*N/A*
Chip (6-24)-4	06/24/13	--	3.8	0.077(j)	62.1	N/A	N/A	N/A
Chip (6-24)-4 Base Comp	*06/24/13*	--	*9.2*	*0.63*	*15.3*	*N/A*	*N/A*	*N/A*
Chip (6-24)-5	06/24/13	--	5.4	0.088(j)	15.4	N/A	N/A	N/A
Chip (6-24)-5 Base Comp	*06/24/13*	--	*8.9*	*0.63*	*76.7*	*N/A*	*N/A*	*N/A*
PS-(6-21)-1	06/21/13	--	6.0	<0.12	6.0	N/A	N/A	N/A
PS-(6-21)-1 Base Comp	*06/21/13*	--	*25.2*	*4.2*	*89.0*	*N/A*	*N/A*	*N/A*
PS-(6-21)-2	06/21/13	--	7.2	0.59	9.7	N/A	N/A	N/A
PS-(6-21)-2 Base Comp	*06/21/13*	--	***44.6***	*0.52*	*9.7*	*N/A*	*N/A*	*N/A*
PS (6-24)-3	06/24/13	--	3.0	0.17(j)	4.4	N/A	N/A	N/A
PS (6-24)-3 Base Comp	*06/24/13*	--	*11.8*	*0.82*	*13.6*	*N/A*	*N/A*	*N/A*
Slag (6-24)-1	06/24/13	--	**118**	<0.019	**35,200**	N/A	N/A	N/A
Slag (6-24)-1 Base	*06/24/13*	--	*16.4*	*0.56*	*17.8*	*N/A*	*N/A*	*N/A*
Slag (6-24)-2	06/24/13	--	**38.7**	1.9	**20,600**	N/A	N/A	N/A
Slag (6-24)-2 Base	*06/24/13*	--	***279***	*<0.040*	***459***	*N/A*	*N/A*	*N/A*

mg/Kg - milligrams/Kilogram

Samples collected from sediments and soils directly beneath or adjacent to Chip, Slag, or Potential Slag from Table 1A are presented in*TALICS*

Base denotes sample was collected discretely directly beneath the Chip, Slag, or Potential Slag

Comp denotes the sample was collected as a composite from beneath the Chip, Slag, or Potential Slag, or contained multiple chips

SED denotes the sample was collected discretely from sediment beneath the base at the water interface

Wall denotes the sample was collected discretely further down the feature beneath the base but above the SED sample

(j) - Denotes an estimated value between the laboratory sample detection limit (SDL) and the laboratory method detection limit (MDL).

Shading indicates a concentration above the TRRP Ecological Benchmark for Sediment

Bold and shading indicates a concentration above the TCEQ Second Effects Level

Bold and shading indicates a concentration above the TCEQ Human Health Sediment PCLs

Benchmarks obtained from theTCEQ guidance document *Update to Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas RG-263 (Revised)*, dated January 2006.

< - Not detected above laboratory SDL.

N/A - Not Applicable

NE - Not Established

TABLE 1C
TCLP ANALYTICAL RESULTS
Stewart Creek East and West of the Dallas North Tollway
Frisco, Texas

Sample I.D.	Sample Date	Depth (feet)	Total Arsenic (mg/Kg)	Total Lead (mg/Kg)	TCLP Arsenic (mg/L)	TCLP Lead (mg/L)
TCLP Maximum Contaminant Concentration (40 CFR Part 261)					**5.0**	**5.0**
TCLP Class 1 Non-hazardous Waste Criteria (30TAC 335)					**1.8**	**1.5**
Chip (6-20)-2	06/20/13	--	14.4	19.1	N/A	N/A
Chip (6-20)-2 Base	*06/20/13*	--	*10.6*	*8.2*	*N/A*	*N/A*
Chip (6-21)-1	06/21/13	--	8.3	180	N/A	**4.1**
Chip (6-21)-1 Base Comp	*06/21/13*	--	*17.7*	*13.3*	*N/A*	*N/A*
Chip (6-21)-2	06/21/13	--	10.5	3.8	N/A	N/A
Chip (6-21)-2 Base Comp	*06/21/13*	--	*12.3*	*9.5*	*N/A*	*N/A*
Chip (6-24)-3	06/24/13	--	3.3	27.0	N/A	N/A
Chip (6-24)-3 Comp	06/24/13	--	11.5	32.6	N/A	N/A
Chip (6-24)-3 Base Comp	*06/24/13*	--	*9.2*	*27.7*	*N/A*	*N/A*
Chip (6-24)-3 Wall Base	*06/24/13*	--	*8.1*	*15.7*	*N/A*	*N/A*
Chip (6-24)-3 SED	*06/24/13*	--	*10.4*	*39.3*	*N/A*	*N/A*
Chip (6-24)-4	06/24/13	--	3.8	62.1	N/A	N/A
Chip (6-24)-4 Base Comp	*06/24/13*	--	*9.2*	*15.3*	*N/A*	*N/A*
Chip (6-24)-5	06/24/13	--	5.4	15.4	N/A	N/A
Chip (6-24)-5 Base Comp	*06/24/13*	--	*8.9*	*76.7*	*N/A*	*N/A*
PS-(6-21)-1	06/21/13	--	6.0	6.0	N/A	N/A
PS-(6-21)-1 Base Comp	*06/21/13*	--	*25.2*	*89.0*	*N/A*	*N/A*
PS-(6-21)-2	06/21/13	--	7.2	9.7	N/A	N/A
PS-(6-21)-2 Base Comp	*06/21/13*	--	*44.6*	*9.7*	*N/A*	*N/A*
PS (6-24)-3	06/24/13	--	3.0	4.4	N/A	N/A
PS (6-24)-3 Base Comp	*06/24/13*	--	*11.8*	*13.6*	*N/A*	*N/A*
Slag (6-24)-1	06/24/13	--	118	35,200	0.084	**23.7**
Slag (6-24)-1 Base	*06/24/13*	--	*16.4*	*17.8*	*N/A*	*N/A*
Slag (6-24)-2	06/24/13	--	38.7	20,600	<0.020	**37.8**
Slag (6-24)-2 Base	*06/24/13*	--	*279*	*459*	*0.084*	***20.6***

mg/Kg - milligrams/Kilogram

mg/L - milligrams/Liter

Samples collected from sediments and soils directly beneath or adjacent to Chip, Slag, or Potential Slag from Table 1A are presented in *ITALICS*

Base denotes sample was collected discretely directly beneath the Chip, Slag, or Potential Slag

Comp denotes the sample was collected as a composite from beneath the Chip, Slag, or Potential Slag, or contained multiple chips

SED denotes the sample was collected discretely from sediment beneath the base at the water interface

Wall denotes the sample was collected discretely further down the feature beneath the base but above the SED sample

(j) - Denotes an estimated value between the laboratory sample detection limit (SDL) and the laboratory method detection limit (MDL).

Bold and shading indicates a concentration above the TCLP Maximum Contaminant Concentration

Bold and shading indicates a concentration above the TCEQ Class 1 Non-hazardous waste criteria

< - Not detected above laboratory SDL.

N/A - Not Applicable

NE - Not Established

Figure 2A

Sample Location Map

City of Frisco
Stewart Creek
Sediment Sampling
Frisco, Texas
SWG Project No. 0111C278A

Southwest GEOSCIENCE

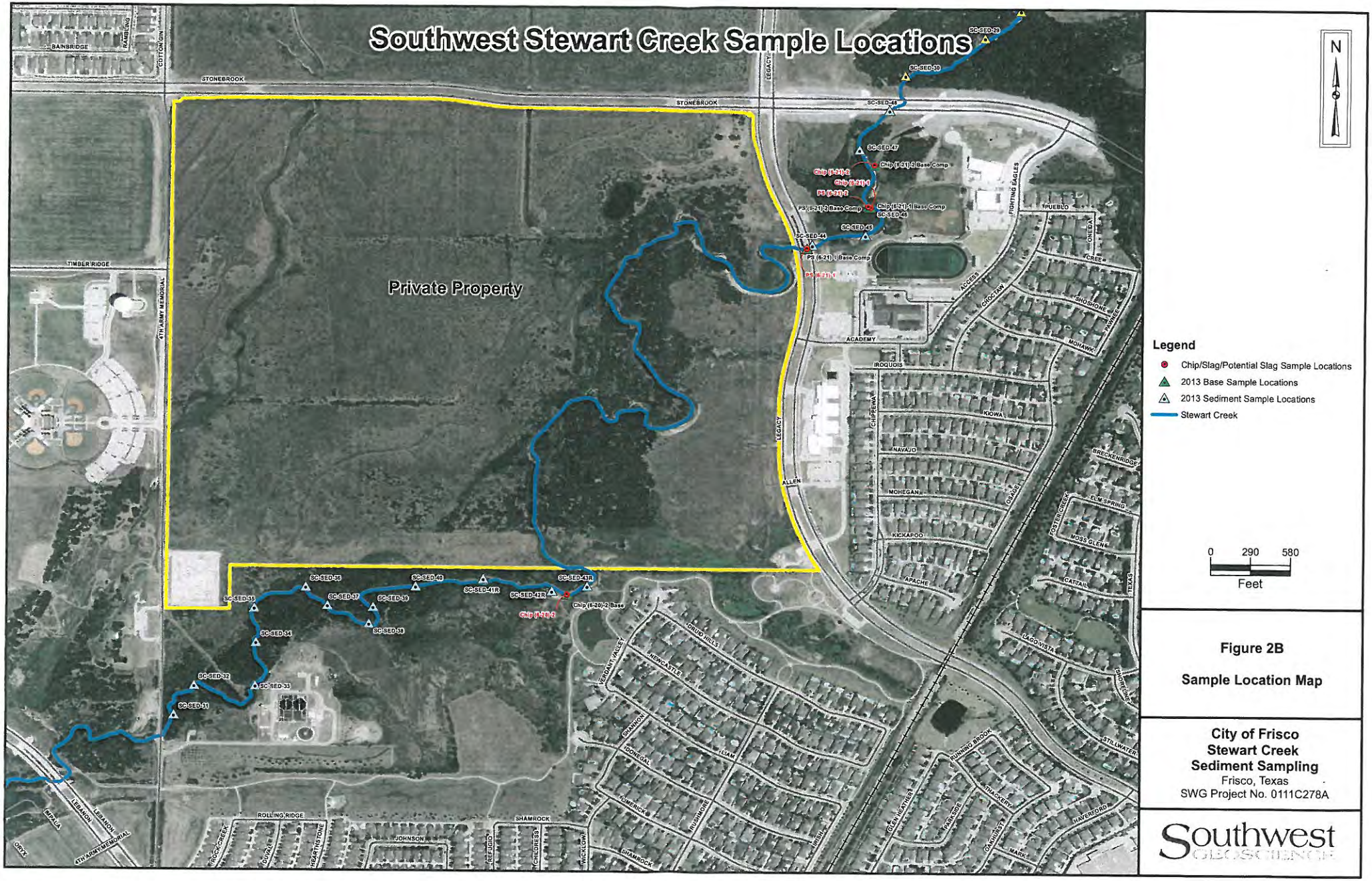

Figure 2B

Sample Location Map

City of Frisco
Stewart Creek
Sediment Sampling
Frisco, Texas
SWG Project No. 0111C278A

Southwest

Attachment C

Groundwater Classification - Former Exide Technologies Facility, Frisco, Texas

COMMENTS ON APPENDIX 7 OF *AFFECTED PROPERTY ASSESSMENT REPORT, FORMER OPERATING PLANT, FRISCO RECYCLING CENTER, FRISCO, COLLIN COUNTY, TEXAS (AGREED ORDER DOCKET NO. 2011-1712-IHW-E)*, PASTOR, BEHLING & WHEELER LLC, DATED 7/10/2013

12 SEPTEMBER 2013

Prepared for:

Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

and

The City of Frisco
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INTRODUCTION

Cook-Joyce, Inc. (CJI) and Southwest Geoscience (collectively referred to as City Consultants) have prepared this document on behalf of the City of Frisco (City). The purpose of this document is to relay the City's concerns regarding the Class 3 groundwater designation that Exide Technologies, Inc. (Exide) is pursuing at their Former Recycling Facility in Frisco, Texas. The City and the City Consultants have concluded that there are multiple technical inconsistencies in Exide's Class 3 groundwater request. Based on our review of the available information, we have concluded that:

1) The area Exide has described as Class 3 groundwater appears to be Class 2 groundwater;

2) Shallow groundwater does not occur in isolated "pockets" at the site; instead, there is a contiguous stratum of alluvial deposits that is continuously saturated across an area that is approximately 100 acres in size (including most of the "Bowtie" property[1], the Class 2 Landfill area, and the M Tract[2]); and

3) Exide appears to be precluded by rule from downgrading Class 2 groundwater to Class 3 groundwater.

The bases for those conclusions and the City's interest in the Exide-related projects in Frisco, Texas, are discussed below.

CITY OF FRISCO'S INTEREST IN EXIDE PROPERTY AND PROJECTS

The City's interest in the groundwater classification at the site is based on the following:

- First and foremost, the City is focused on the well-being of its citizens and the environment in which they live.

- In an effort to protect its citizens and environment the City entered into an agreement with Exide to purchase "buffer property" from Exide. The buffer property is adjacent to Exide's Frisco Recycling Facility. The purchase price for that land (known as the "J Parcel" and, potentially, the "Lake Parcel") was negotiated in part to provide Exide with the necessary funds to appropriately address the endemic contamination present at their facility.

- The groundwater classification at the former Exide facility directly impacts the size and scope of any response action that is undertaken. The City's desire is that Exide's groundwater classification be interpreted in strict accordance with TCEQ rules and guidance and that contamination present at the former Exide facility be removed or controlled in a manner that will prevent exposure to the contaminants and their off-site migration.

[1] The Bowtie property (named such because its shape resembles a bowtie) represents Exide's Resource Conservation and Recovery Act (RCRA)-Permitted area. It contains the former recycling facility, the "Lake Parcel" (an undeveloped tract of land located west of the former recycling facility), and areas immediately south and immediately north of the Exide facility.

[2] The M Tract is a tract of land currently owned by Exide that is located west of the Class 2 landfill and north of the Bowtie property.

Based on the factors listed above, the City has an ethical and fiduciary responsibility to ensure that the investigation, response action, and eventual closure of Exide's Former Recycling Facility is thorough and based on solid scientific and technical principles.

GROUNDWATER RESOURCE CLASSIFICATION EVALUATION

A document entitled *Updated Groundwater Resource Classification Evaluation, Exide Frisco Recycling Center, Frisco, Texas*, by Pastor, Behling & Wheeler LLC (PBW), dated July 9, 2013 (Groundwater Memo) was submitted as Appendix 7 of the APAR[3] for Exide's Former Recycling Facility. This document is an updated version of similar documents that were submitted to the Texas Commission on Environmental Quality (TCEQ) on November 29, 2012 and on May 22, 2013. The City provided comments from its technical consultants regarding both of those previous documents directly to Exide after learning of each submittal to the TCEQ. The City and its consultants have also informed the TCEQ of their concerns during monthly meetings held regarding the Exide site. In addition, these comments and their technical bases were discussed with Exide, their attorneys (Baker Botts LLP), and their technical consultants (PBW) during a June 6, 2013 meeting held specifically on this subject.

The Groundwater Memo provides data that indicate that the predicted yield of shallow groundwater at the site[4] varies from levels consistent with a saturated soil to levels consistent with a Class 2 groundwater, with Class 3 groundwater being an intermediate point between those two bounding conditions. With a few exceptions, the Exide data indicate saturated soils are typically found to the south of Stewart Creek and to the east of 5th street. The Exide data also identify yields that are consistent with Class 2 or Class 3 groundwater within the former plant area, north of Stewart Creek, and west of 5th Street. In these areas, Exide states that Class 2 groundwater yields are typically found in areas with "lenses" of gravel and/or sand and Class 3 groundwater yields are typically present in areas without those lenses.

Although the Groundwater Memo notes that the yield and quality of the groundwater meets Class 2 criteria in some areas of the site, it concludes that, due to their limited hydrogeologic extent[5], the more transmissive gravels and sands "appear incapable of sustaining a long-term daily withdrawal rate that would satisfy the Class 2 criteria; therefore, it is appropriate to downgrade the gravels and sands to a Class 3 designation in accordance with TRRP-8."

The City disagrees with this conclusion and the following section outlines additional lines of evidence supporting the classification of the groundwater bearing unit as a Class 2 groundwater resource.

Apparent Extent of Class 2 Sands and Gravels

Exide maintains that groundwater at Bowtie/J Parcel is Class 3 because of the limited areal extent of sand and gravel lenses that produce most of the groundwater. TCEQ regulatory guidance (RG-366/TRRP-8, *Groundwater Classification*, revised March 2010) addressed the

[3] *Affected Property Assessment Report, Former Operating Plant, Frisco Recycling Center, Frisco, Collin County, Texas (Agreed Order Docket No. 2011-1712-IHW-E)*, Pastor, Behling & Wheeler LLC, dated 7/10/2013.

[4] The shallow groundwater at the site is found within a few feet of the ground surface and extends down to the surface of the Eagle Ford Shale (between ~10 to ~30 feet below grade depending the location within the site).

[5] More information regarding Class 2 groundwater, Class 3 groundwater, and Exide's limited hydrogeologic extent conclusion is provided in Attachment A of this document.

burden of proof to be met in making a Class 3 groundwater determination on this basis, identifying the need to perform a "rigorous geological analysis" to support such a determination. The City Consultants believe that a rigorous geological investigation has been performed. However, we believe that the data gathered during the geological investigation supports a Class 2 groundwater designation, not a Class 3 groundwater designation. For example, the Groundwater Memo indicates that the shallow geology at the former Exide facility consists of 3 distinct units:

1) A clay with no or very limited gravel (saturated soils);

2) Clayey gravels that meet the definition of a Class 3 resource based on calculated yield values; and

3) Gravels and sands that are laterally discontinuous and therefore should be downgraded from a Class 2 to a Class 3 designation.

PBW includes cross-sections with the Groundwater Memo to illustrate the basis for their conclusions.

The City concurs that saturated soils appear to be present to the east of 5th Street (with some minor exceptions, such as the area near VCP-MW-8) and to the south of Stewart Creek and the former Exide operating facility. However, the City and our technical consultants believe that the "clayey gravels" and "gravels and sands" (units 2 and 3 as identified by PBW) are actually one unit that represents "alluvial deposits". The alluvial deposits originate from Stewart Creek, which borders Exide's former operating facility to the south, and its northern tributary, which is located to the north of the operating facility. Generally the alluvial deposits appear to extend from the Class 2 landfill to the north to Stewart Creek to the south, and from Eagan Way to the east to the Museum of the American Railroad property to the west.

These alluvial deposits consist of unconsolidated soils with grain sizes ranging from silty clays to sandy gravels. This unit is present and is continuously saturated across the northern and eastern portions of the site. Figure 1 (attached) provides a map of the apparent extent of this unit based on an overlay of the extent of the clayey gravels and extent of the gravels and sands as mapped by PBW. Figure 2 documents the saturated thickness of the unit in and around the former Exide operating facility.

The cross sections that were included with the Groundwater Memo (Sections A-A' through F-F') have been revised to illustrate the interpretation of the City's consultants that connectivity exists between transmissive strata at the site and are attached to this document.

Based on review of the lithologic data presented by PBW, a historic stream channel (a paleochannel) appears to be present within the alluvial deposits at the site. This feature lies immediately to the south of the Class 2 landfill in a roughly east-west orientation, and appears to cross beneath the southeast corner of the Class 2 landfill. The paleochannel contains transmissive soils and, based on a previous groundwater pump test (described below), can produce prodigious amounts of groundwater. However, the apparent paleochannel is not addressed by PBW in its geological and hydrogeological characterization of the site, and the cross sections prepared by Exide for the Groundwater Memo and the APAR to which it is attached did not include a cross section along the paleochannel.

Therefore, a new cross section that generally aligns longitudinally along the paleochannel (Section G-G') has been prepared to depict this feature and is attached to this document. There is a higher percentage of gravel and sand in the paleochannel than in the alluvial deposits outside of the channel.

Fill Material

In addition to the clay and alluvial deposits, the City believes that there is a third distinct unit present in the shallow soils at the site: fill material. Based on the observations noted on the boring logs included in the APAR, the fill material consists of reworked soils native to the area, slag, battery chips, municipal solid waste, and potentially other types of debris.

Because the Exide facility extends over the former channel of Stewart Creek and its northern tributary (the Slag Landfill and North Disposal Area extend over the northern tributary's former channel as well), a large percentage of the central and western portions of the operating facility is situated on fill. In some areas the fill is relatively deep and is saturated. For example, MW-30 was installed through (or very close to) the former Stewart Creek channel. The boring log for MW-30 reports slag and lead were found at a depth of 28 feet below grade at that location. Figure 3 depicts the possible extent of fill at the former operating facility. The former stream channels are also depicted on Figures 1-3, and an overlay of the Exide facility on a 1942 aerial photograph is provided as Figure 4.

Groundwater flow characteristics in unconsolidated fill will be highly variable and some areas could yield large amounts of groundwater. While the City is not suggesting that groundwater will be produced from filled areas, groundwater yield is one of the two defining characteristics in groundwater classification; therefore the yields from those areas should be considered in this evaluation. In addition, another purpose of groundwater classification is to evaluate potential groundwater transport pathways. The saturated fill likely represents a different transport pathway and requires evaluation; especially since waste is present within the saturated fill.

Well Development

As documented in literature, the development of groundwater monitoring wells is a critical step in any program designed to measure the hydraulic conductivity of a groundwater bearing unit. Well development procedures for each of the monitoring wells that are used in PBWs groundwater classification memo to demonstrate hydraulic conductivity are not included in the appendices, nor are they included in the Bowtie APAR, so direct correlation of well development procedures to hydraulic conductivity measurements is not possible in each case. However, based on SWG observations of the well development procedures initially proposed by PBW during the J-Parcel APAR investigation, well development is a factor in a low biased estimation of hydraulic conductivity.

During the J-Parcel APAR investigation, SWG had discussions with PBW personnel regarding the method of well development that was planned for the new wells on the J-Parcel which included purging with a downhole electric submersible pump. During the drilling process, saturated sand, gravel, clayey gravel and saturated clay lithologies were observed. Clays have the likelihood of creating skin effects in the borehole; therefore, SWG strongly suggested the initial use of a heavy, PVC bailer or surge block device to surge the wells prior to the completion of removing fines with a downhole submersible pump. The purpose of this recommendation was to increase the energy applied to the development procedure, resulting in a more effective well development. Based on a review of the well development records provided for wells on the

Bowtie parcel that SWG was not present to observe, it appears that surging with a surge block or PVC bailer was not performed during well development outside of the new wells on the J-Parcel.

An analysis of well development and purging records for the new monitoring wells on the J-Parcel and the wells on the Bowtie parcel, indicates that an improved well condition is apparent for the monitoring wells that underwent a more aggressive and sustained well development program (surging with a PVC bailer over multiple events). VCP-MW-3 was the only newly installed well that did not respond to the more aggressive development program, most likely due to localized conditions of lower hydraulic conductivity. The other new monitoring wells on the J-Parcel had turbidity readings at sampling that were lower than 10 Nephelometric Turbidity Units (NTUs), and were not subject to filtration during total metals sampling. In general, wells on the Bowtie Parcel exhibited turbidity readings at the time of sample collection that were greater than 10 NTUs, and some as high as 176 NTUs.

It is SWG's opinion that a more aggressive well development program resulted in better groundwater clarity and improved turbidity readings at most of the new wells on the J-Parcel. In addition, more well development may be needed prior to additional measurements of hydraulic conductivity to further evaluate the actual production of the formation as it is likely biased low given the higher turbidity readings observed on the Bowtie Parcel.

Yield Testing

In their Groundwater Memo, Exide acknowledges that certain monitoring wells will likely yield enough groundwater on a daily basis to qualify as a Class 2 groundwater resource. However, they then attempt to discount their own data and the data from another Exide consultant. On page 7 of their memo, PBW states,

> "Short-term tests on most of the wells completed in gravels or sands will likely exceed the Class 3 yield criterion of 150 gpd [gallons per day]. For example, well B5N maintained a pumping rate of 0.1 gpm [gallons per minute] during a 48-hour pump test in March 2012. Given the surrounding boundary conditions, the well would likely have gone dry had it been pumped at a higher rate or for a longer period."

Although PBW mentions this test, they do not provide the data associated with the pump test in their memo. However, PBW did provide a draft version of some of those data to the City. That table is provided as Attachment B to this document. As shown in the table, PBW continuously pumped well B5N at an approximate rate of 0.1 gpm. Over the 48 hour period shown in the table 288 gallons of water were produced. At the end of the test, the groundwater elevation had dropped approximately 2.64 inches from the elevation measured immediately before the test began.

In addition to the yield test performed on B5N, a previous Exide consultant performed a pump test on Monitoring Well LMW-17 in 1995. Those data are also discussed in the Groundwater Memo, but with the focus being on an apparent boundary condition that the data might indicate is present. The City does not know if the data indicate that a boundary condition is present, because there could be multiple reasons that the drawdown at that phase of the test could have increased. Instead, the City focuses on the results of the pump test, during which LMW-17 reportedly produced groundwater at a rate of 8 gpm for approximately 500 minutes (approximately 8 hours). At that rate the well would have produced approximately 4,000 gallons of groundwater during that test. The final drawdown in the well was approximately 1.07 feet.

Because the groundwater yield at monitoring well LMW-17 was so prolific during the pump test, Exide's consultant Jones & Neuse, Inc. (J&N) recommended the use of two dewatering wells during the construction and filling of Cell 1 in the Class 2 Landfill, which is located just to the north of LMW-17.

PBW also attempts to discount the pumping test results from the 1995 test on LMW-17 by comparing recent low flow sampling efforts on monitoring wells in the vicinity of LMW-17. PBW notes that monitoring wells LMW-8, LMW-22 and LMW-5 each went dry at a purge rate of less than 0.2 gpm. LMW-8 is the only well that PBW categorizes as "gravel/sand lens present", and this well has approximately one foot of sand present. In addition, LMW-22 is classified as "no gravel/sand lens present", and LMW-5 is classified as "clayey gravel present". Monitoring wells LMW-21, PMW-20R, VCP-MW-6 are classified as "gravel/sand lens present", and appear to occur within the paleochannel discussed previously. These monitoring wells did not go dry during recent purging events. No discussion is included in PBW's document about the drought conditions prevalent in the North Texas region. It should be noted that the difference in groundwater elevations from the 1995 groundwater level measurements to the 2013 data collected indicate a drop in groundwater elevation of over seven feet in LMW-5 and over two to four feet in other locations across the site. This drop in groundwater elevation could result in a temporarily reduced saturated thickness that is not representative of the long term condition of the groundwater bearing unit.

Finally, in their Groundwater Memo, Exide contends that additional yield testing should not be performed in "clayey gravels" based on the results of a comparison made in accordance with the TCEQ's current guidance document on groundwater classification[6]. The Memo specifically states that:

> "It is instructive to review Figure 9 from TRRP-8 (included as Attachment F of this appendix) when evaluating the groundwater yield of the clayey gravels. Figure 9 graphically illustrates the relationship between saturated thickness (b), hydraulic conductivity (K) values, and well yields (Q). According to TRPP [sic] Section 2.7.1 (Method 1), direct measurement of well yield is not required unless the calculated yield of the groundwater-bearing unit is within 20 percent of the Class 2/3 boundary (the area shaded gray on Figure 9). At the Site, the average thickness of the clayey gravels is about 2 feet, with an average K value of 1.7×10^{-3} cm/sec. When these values are plotted on Figure 9 (Attachment F), the chart shows that the clayey gravel is "Low Yield" only capable of yielding about 80 gpd [gallons per day], well below the Class 2/3 boundary; thus according to Note 2 on Figure 9, direct well yield tests are not required to confirm proper groundwater classification."

The City agrees that it is instructive to review Figure 9 from TRRP-8. However, in doing so it appears that PBW has performed that comparison incorrectly. In their evaluation, PBW used the average thickness of the "clayey gravels", which would be correct if those "clayey gravels" were considered a confined unit. But the saturated stratum being tested is unconfined. Therefore, PBW should have used the saturated thickness of the groundwater bearing unit being tested, which is clearly spelled out in the instructions for Figure 9 and on page 17 of TRRP-8, which defines saturated thickness as, "For unconfined GWBUs [Groundwater Bearing Units], the saturated thickness (b) at each location is the vertical distance from the static water level elevation to the base of the saturated unit".

[6] RG366/TRRP-8, *Groundwater Classification*, revised March 2010.

PBW also appears to have made a similar error when calculating well yields for wells in "clayey gravel" and "gravel and sand". In both cases they used the thickness of the stratum they felt was producing the groundwater from those wells, versus the measured saturated thickness at those wells. What is unusual is that their error was not carried through with the yield tests performed on monitoring wells installed in clays ("saturated soils"), where yields were calculated using what appear to be the correct saturated thicknesses.

Based on this discrepancy, the City reviewed the saturated thickness in all of the available monitoring wells that had been described by Exide as being locations where "clayey gravel" yielded most of the groundwater (and therefore the groundwater was Class 3 per their definition). The following table provides the well number, the elevation of the underlying shale (which is assumed to be the base of the saturated thickness), the groundwater elevation (as measured in April 2013), and the "saturated thickness" reported by PBW in the Groundwater Memo.

Well ID	Shale Elevation (ft amsl)	Groundwater Elevation (ft amsl)	Saturated Thickness (Groundwater Elevation – Shale Elevation) (ft)	Saturated Thickness Reported in Groundwater Memo
LMW-1	617.90	629.60	11.7	
LMW-3	622.76	627.70	4.94	
LMW-5	623.27	625.98	2.71	4.0
LMW-8	625.57	638.34	12.77	2.0
MW-16S	608.93	618.87	9.94	2.0
VCP-MW-4	621.48	628.52	7.04	
VCP-MW-9	646.31	653.14	6.83	
P-1	628.95	633.52	4.57	
B5N	610.97	621.39	10.42	4.0
B9N	622.52	631.63	9.11	2.0
MW-11	611.58	617.41	5.83	
MW-18	617.34	629.81	12.47	
Average			8.19	2.0

Notes: Shale elevation interpolated from known ground elevations and review of boring logs.
Groundwater elevations measurements made on April 29, 2013

When completing Figure 9 from TRRP-8 using the hydraulic conductivity (k) value calculated by Exide for the Bowtie APAR and a saturated thickness of 8.19 instead of 2.0, the City has determined that Exide's conclusion that the projected yield of these wells falls within the Class 3 boundary is incorrect. Per Figure 9 those wells clearly represent a Class 2 resource and should be treated as such until or unless yield testing performed on them suggests otherwise. The Figure 9 interpretation completed by the City is provided as Attachment C to this document.

General Discussion on Groundwater Classification

Although the City questions the Class 3 designation applied to portions of the uppermost GWBU at the site, it accepts that yield testing might document that some of those locations represent Class 3 groundwater, with the remainder being Class 2 groundwater. However, per 30 TAC §350.52, "If a GWBU meets the criteria for more than one groundwater classification, then the

GWBU shall be assigned the higher (quality) classification." Therefore, downgrading Class 2 groundwater to Class 3 appears to be precluded by rule.

Finally, it appears that Stewart Creek can act as a gaining stream or as a losing stream based on the current conditions in the area. In the event that Stewart Creek acts as a gaining stream at the site groundwater will enter the creek. That represents a potential human and ecological exposure pathway as soon as it reaches the stream area in the vicinity of Exide's property. By definition, groundwater from a Class 3 GWBU cannot be used within 0.5 miles in a manner resulting in human or ecological exposure.

CONCLUSIONS AND CLOSING

In summary, the City has concluded that:

- Exide has inadequately proven that portions of the Site are Class 3 groundwater;
- Exide appears to be precluded by rule from classifying Class 2 groundwater as Class 3 groundwater; and
- Yield tests performed by Exide's consultants prove that Class 2 groundwater is present in an area encompassing the former operating facility, Lake Parcel, Class 2 Landfill area, and the M Tract (a portion of the J Parcel).

The City recommends that the TCEQ thoroughly review and evaluate the information presented in this document prior to making a final ruling on the groundwater classification at the site.

FIGURES

N

STATE OF TEXAS
RUSTY SIMPSON
GEOLOGY
LIC. #218
LICENSED
PROFESSIONAL GEOSCIENTIST

0 200 400
FEET

Clayey Gravel Thickness Contour Interval (Feet)

0.5 1.0 1.5 2.0 2.5 3.0 3.5

Sand/Gravel Thickness Contour Interval (Feet)

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Legend

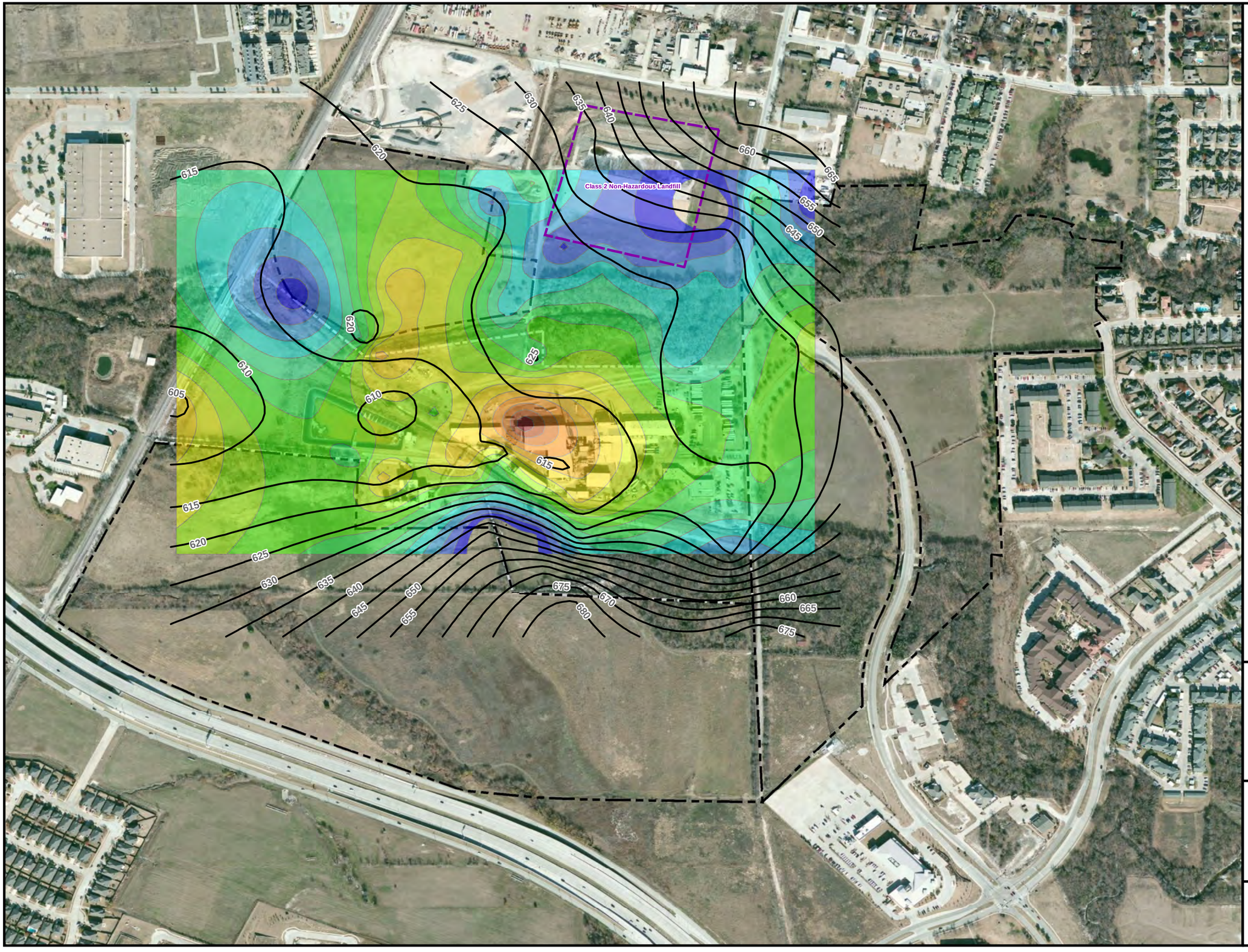
- Bedrock Elevation Contour (Feet)
- J-Parcel Boundary
- RCRA Boundary

Note: Bedrock elevation may vary beneath the Class 2 Non-hazardous Landfill in the model shown based on final grade elevations.

Figure 1
Former Exide Technologies

Clayey Gravel Thickness, Sand/Gravel Thickness & Bedrock Elevation Map

Southwest GEOSCIENCE



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STATE OF TEXAS
RUSTY SIMPSON
GEOLOGY
LIC. #218
LICENSED
PROFESSIONAL GEOSCIENTIST

0 200 400
FEET

Saturated Thickness Contour Interval (Feet)

2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Legend

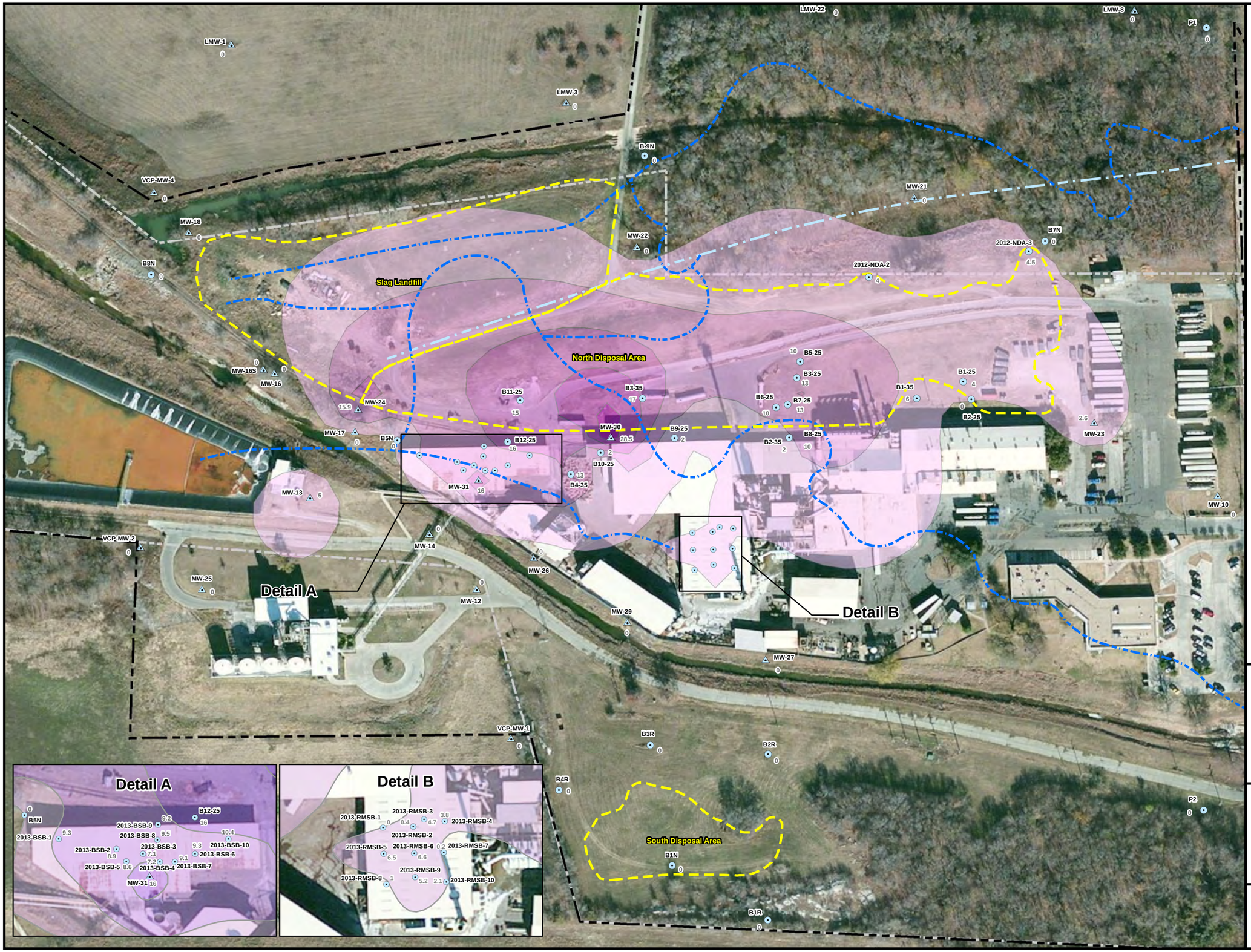
- Bedrock Elevation Contour (Feet)
- J-Parcel Boundary
- RCRA Boundary

Note: Bedrock Elevation may vary beneath the Class 2 Non-Hazardous Landfill in the model shown based on former final grade elevations.

Figure 2
Former Exide Technologies

Saturated Interval & Bedrock Elevation Map

Southwest GEOSCIENCE



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RUSTY SIMPSON
GEOLOGY
LIC. #218
LICENSED
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0 70 140
FEET

Fill Thickness Contour Interval (Feet)

2 7 12 17 22

Legend

- Soil Borings
- Monitoring Wells
- 1942 Stewart Creek & Tributaries
- 1972 Stewart Creek Tributary
- J-Parcel Boundary
- RCRA Boundary

Figure 3
Former Exide Technologies

Fill Thickness

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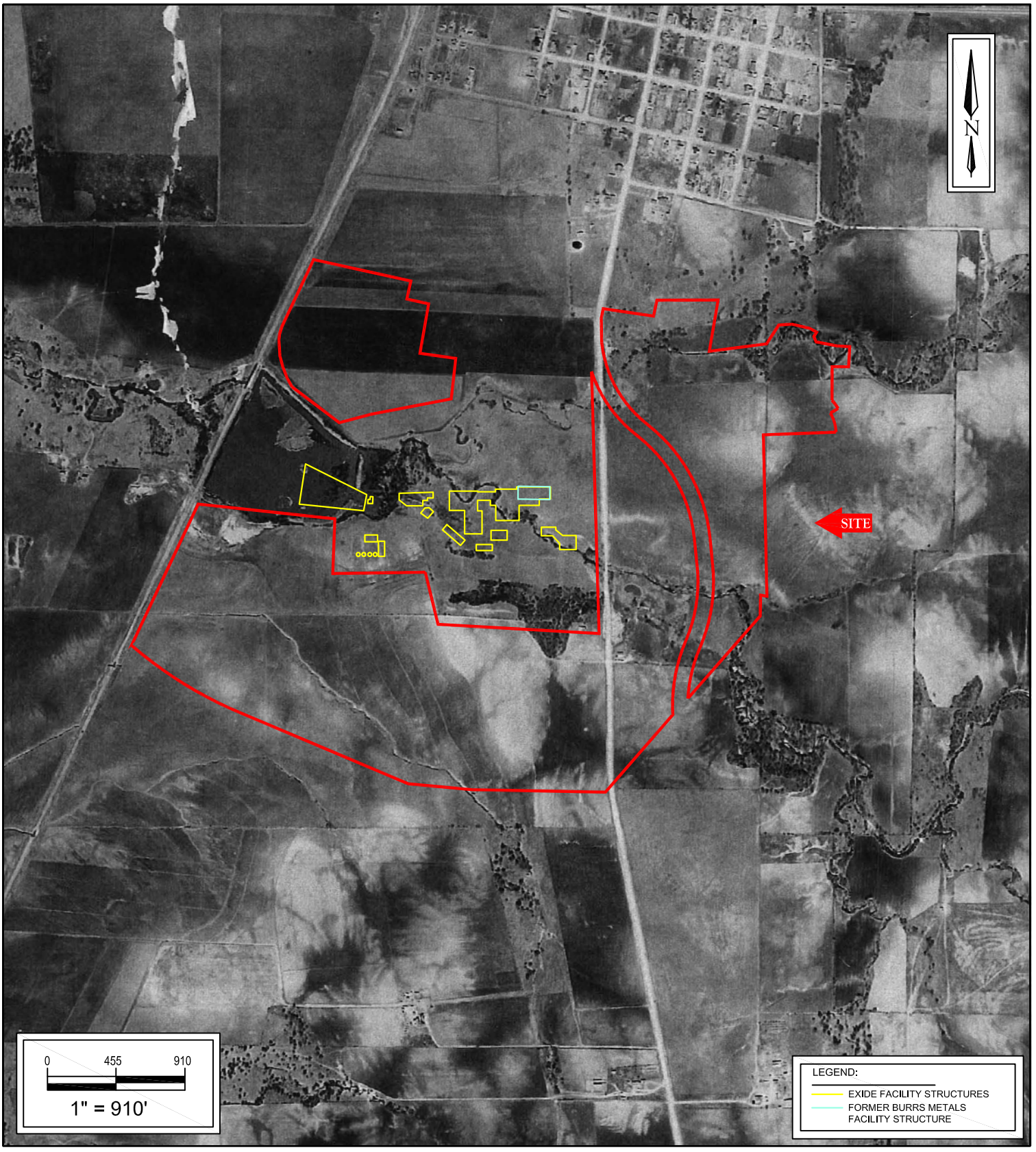


Environmental Site Assessment
J Parcel
Near Intersection of Eagan Dr. & 5th St.
Frisco, Collin County, Texas

SWG Project No. 0112079E

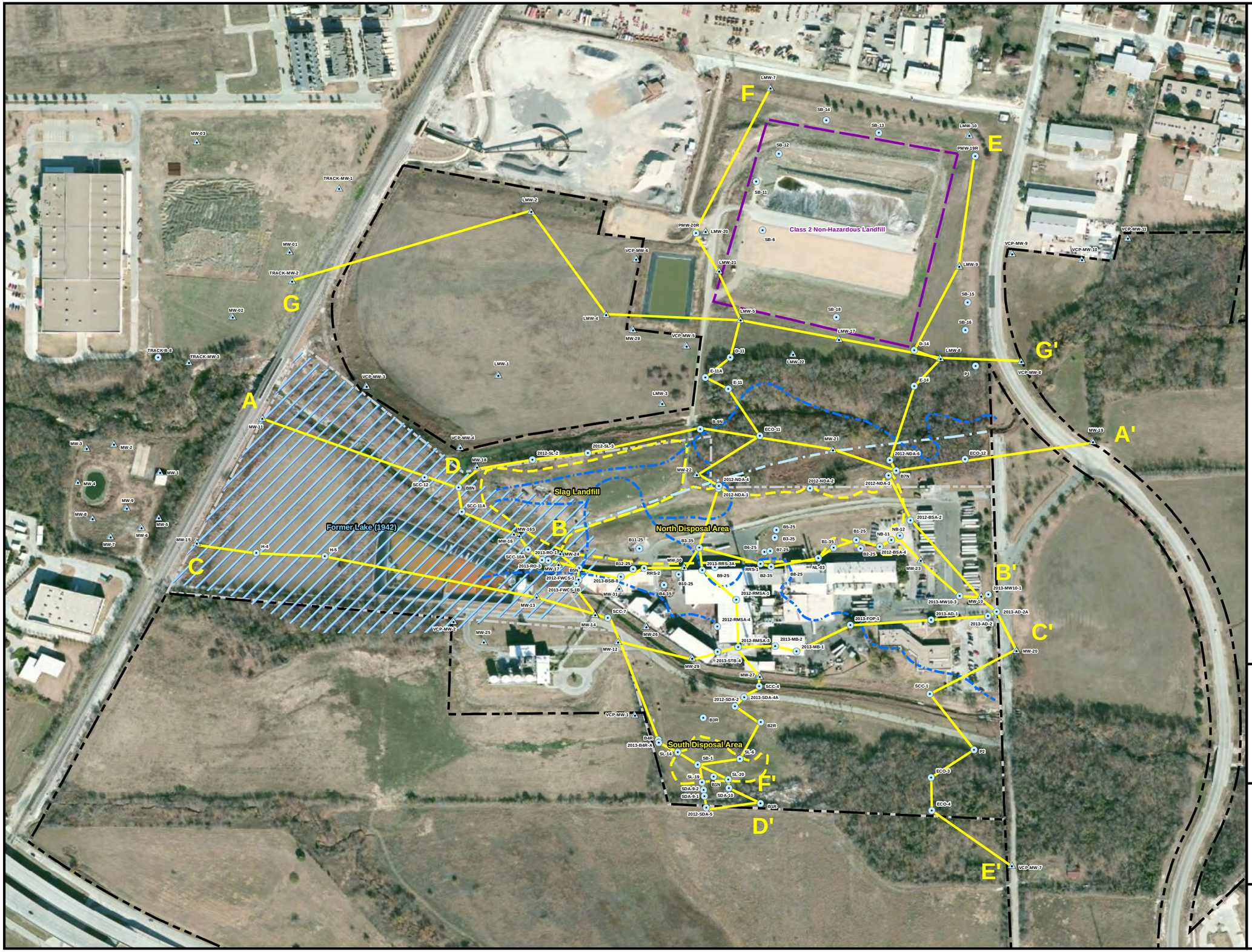
Southwest GEOSCIENCE

Figure 4

Aerial Photograph

1942

CROSS SECTIONS



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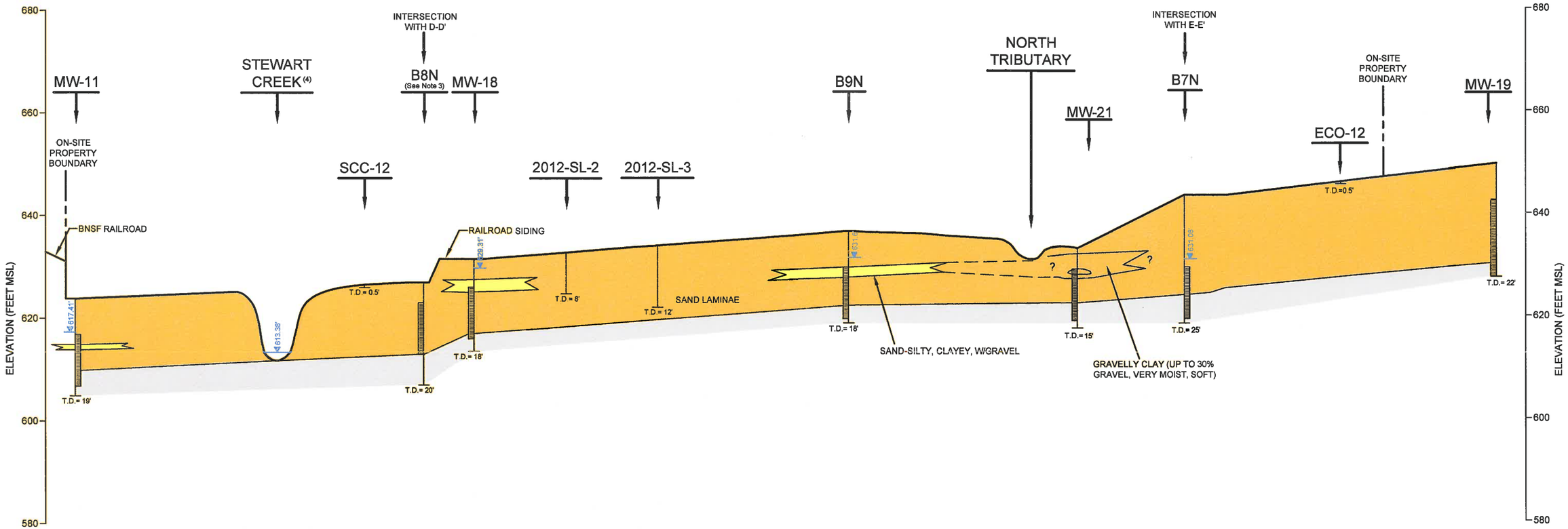
Note: Cross sections A-A' through F-F' are PBW geoscience work that has been reviewed and modified by Cook-Joyce, Inc.

Former Exide Technologies

Cross Section Location Map

Southwest GEOSCIENCE

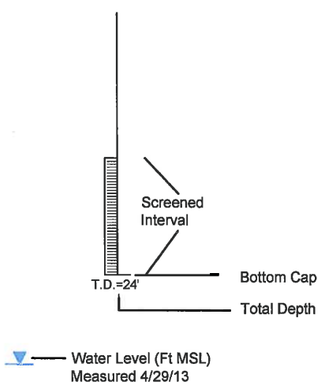


EXPLANATION

GENERALIZED LITHOLOGIC ABBREVIATIONS

- Clay or Silty Clay with Minor Occurrences of Clayey Silt, Clayey Sand, and Gravelly Clay
- Clayey Gravel or Sand
- Eagle Ford Shale

MONITORING WELL CONSTRUCTION



SOURCE: PASTOR, BEHLING & WHEELER, LLC DRAFT 22 MAY 2013 UPDATED GROUNDWATER RESOURCE EVALUATION MEMO.

Notes
1. Ground surface and creek bed topography are estimated. Monitoring well ground surface elevations were surveyed by a licensed surveyor.
2. See attached Figure for cross section location.
3. B8N destroyed.
4. Stewart Creek water elevation inferred from Staff Gauge 2.
5. Depths given in feet below ground surface.
6. MSL = above mean sea level.
7. ? - Boundary Uncertain.

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No. 9992
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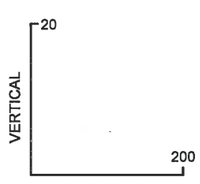
Richard Varnell
9/12/13

SCALE IN FEET



10x Vertical Exaggeration

REV.	DATE	DESCRIPTION	DR BY	APP BY

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AUSTIN, TEXAS 78701
TEXAS REGISTERED ENGINEERING FIRM F-883

PROJECT:
EXIDE FACILITY & ADJACENT PROPERTIES
FRISCO, TEXAS

SHEET TITLE:
GEOLOGIC CROSS SECTION A-A'

DES BY			SCALE: SEE BAR SCALE
DR BY	SDB		PROJECT NO. 12061.01
CHK BY	RDV		CJI NO. 12061003
APP BY	RDV		SHEET 1 OF 1 SHEETS
DATE ISSUED: 09-12-2013			FIGURE NO. NA
PURPOSE: GW CLASSIFICATION			

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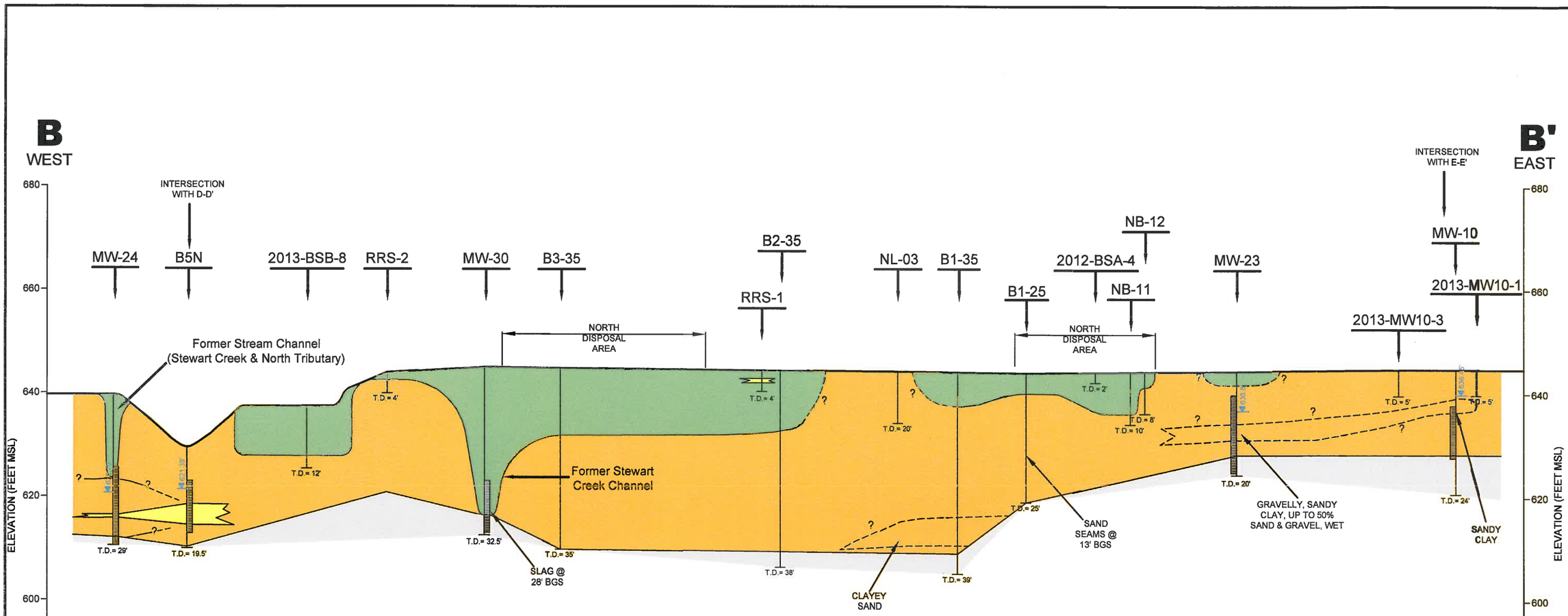
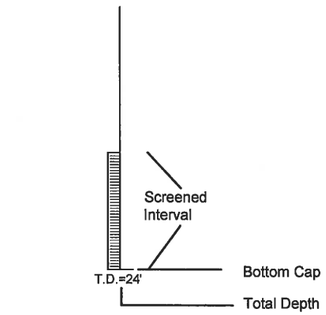


EXPLANATION

GENERALIZED LITHOLOGIC ABBREVIATIONS

- Fill
- Clay or Silty Clay with Minor Occurrences of Clayey Silt, Clayey Sand, and Gravelly Clay
- Clayey Gravel or Sand
- Eagle Ford Shale

MONITORING WELL CONSTRUCTION

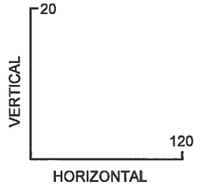


SOURCE: PASTOR, BEHLING & WHEELER, LLC DRAFT 22 MAY 2013 UPDATED GROUNDWATER RESOURCE EVALUATION MEMO.

Notes
1. Ground surface and creek bed topography are estimated. Monitoring well ground surface elevations were surveyed by a licensed surveyor.
2. See attached Figure for cross section location.
3. Depths given in feet below ground surface.
4. MSL = above mean sea level.
5. ? - Boundary Uncertain.

STATE OF TEXAS
RICHARD D. VARNELL
GEOLOGY
No. 4992
LICENSED
PROFESSIONAL GEOSCIENTIST
9/12/13

SCALE IN FEET



6x Vertical Exaggeration

REV.	DATE	DESCRIPTION	DR BY	APP BY

COOK-JOYCE INC.
ENGINEERING AND CONSULTING
812 WEST ELEVENTH 512-474-9097
AUSTIN, TEXAS 78701
TEXAS REGISTERED ENGINEERING FIRM F-883

PROJECT:
EXIDE FACILITY & ADJACENT PROPERTIES
FRISCO, TEXAS

SHEET TITLE:
GEOLOGIC CROSS SECTION B–B'

DES BY			SCALE: SEE BAR SCALE
DR BY	SDB		PROJECT NO. 12061.01
CHK BY	RDV		CJI NO. 12061006
APP BY	RDV		SHEET 1 OF 1 SHEETS
DATE ISSUED: 09-12-2013			FIGURE NO. NA
PURPOSE: GW CLASSIFICATION			

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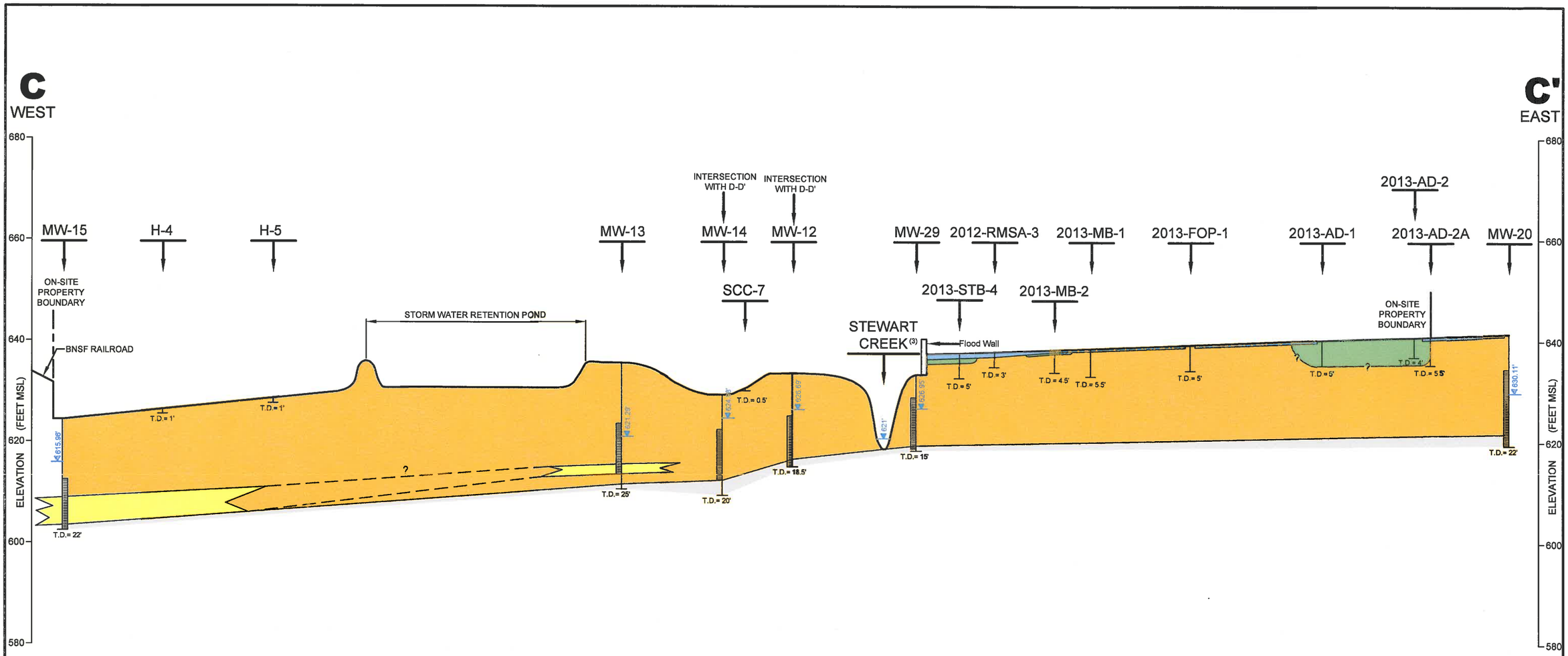
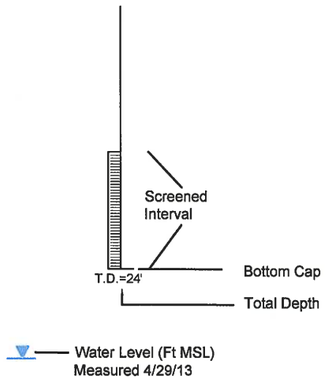


EXPLANATION

GENERALIZED LITHOLOGIC ABBREVIATIONS

- Concrete
- Fill
- Clay or Silty Clay with Minor Occurrences of Clayey Silt, Clayey Sand, and Gravelly Clay
- Clayey Gravel or Sand
- Eagle Ford Shale

MONITORING WELL CONSTRUCTION

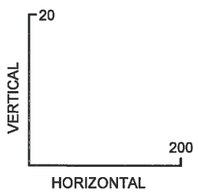


SOURCE: PASTOR, BEHLING & WHEELER, LLC DRAFT 22 MAY 2013 UPDATED GROUNDWATER RESOURCE EVALUATION MEMO.

Notes
1. Ground surface and creek bed topography are estimated. Monitoring well ground surface elevations were surveyed by a licensed surveyor.
2. See attached Figure for cross section location.
3. Stewart Creek water elevation inferred from Staff Gauge 2.
4. Depths given in feet below ground surface.
5. MSL = above mean sea level.
6. ? - Boundary Uncertain.

STATE OF TEXAS
RICHARD D. VARNELL
GEOLOGY
NO. 4992
PROFESSIONAL GEOSCIENTIST
9/12/13

SCALE IN FEET



10x Vertical Exaggeration

REV.	DATE	DESCRIPTION	DR BY	APP BY

COOK-JOYCE INC.
ENGINEERING AND CONSULTING
812 WEST ELEVENTH 512-474-9097
AUSTIN, TEXAS 78701
TEXAS REGISTERED ENGINEERING FIRM F-883

PROJECT:
EXIDE FACILITY & ADJACENT PROPERTIES
FRISCO, TEXAS

SHEET TITLE:
GEOLOGIC CROSS SECTION C-C'

DES BY			SCALE: SEE BAR SCALE
DR BY	SDB		PROJECT NO. 12061.01
CHK BY	RDV		CJI NO. 12061007
APP BY	RDV		SHEET 1 OF 1 SHEETS
DATE ISSUED: 09-12-2013			FIGURE NO. NA
PURPOSE: GW CLASSIFICATION			

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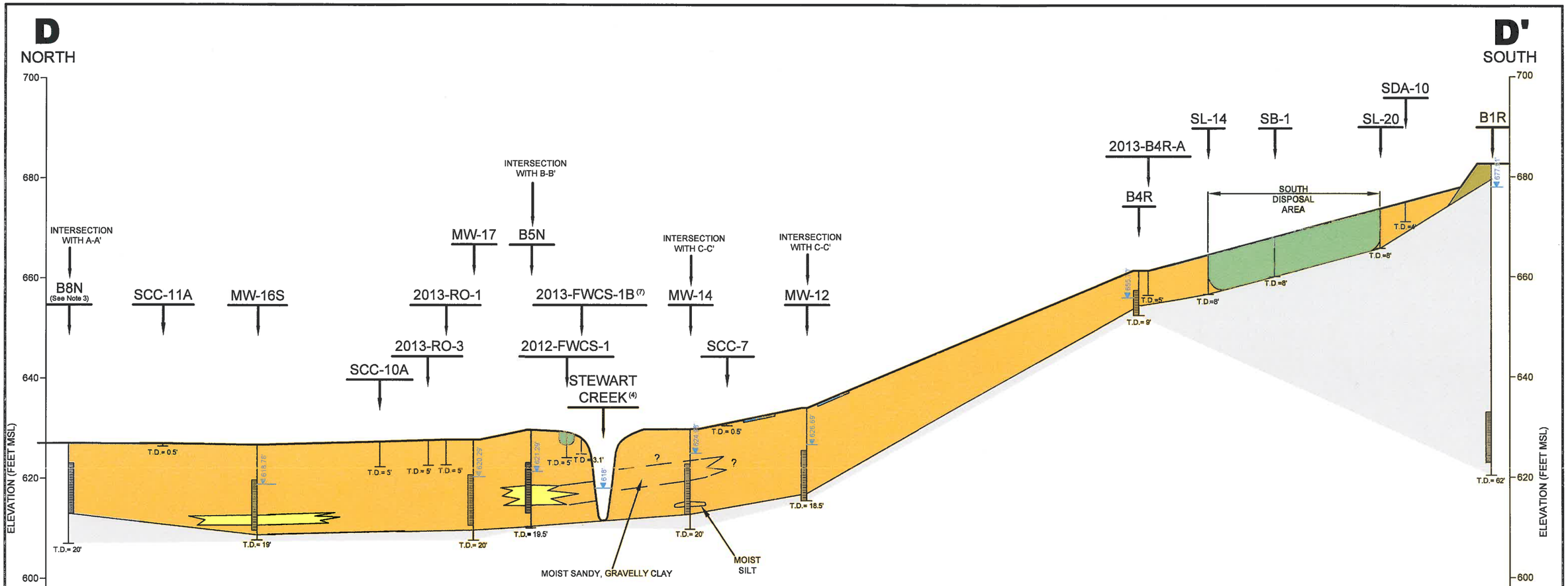
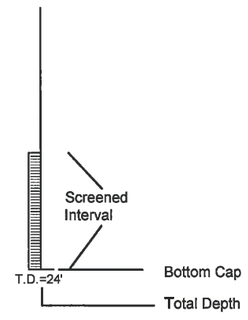


EXPLANATION

GENERALIZED LITHOLOGIC ABBREVIATIONS

- Concrete
- Fill
- Clay or Silty Clay with Minor Occurrences of Clayey Silt, Clayey Sand, and Gravelly Clay
- Clayey Gravel or Sand
- Austin Chalk Limestone
- Eagle Ford Shale

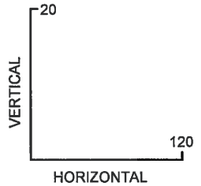
MONITORING WELL CONSTRUCTION



Notes
1. Ground surface and creek bed topography are estimated. Monitoring well ground surface elevations were surveyed by a licensed surveyor.
2. See attached Figure for cross section location.
3. B8N destroyed.
4. Stewart Creek water elevation inferred from Staff Gauge 1 and Staff Gauge 2 measurements.
5. Depths given in feet below ground surface.
6. MSL = above mean sea level.
7. Gabion basket present at 0 to 1.1 feet below ground surface.
8. ? - Boundary Uncertain.

SOURCE: PASTOR, BEHLING & WHEELER, LLC DRAFT 22 MAY 2013 UPDATED GROUNDWATER RESOURCE EVALUATION MEMO.

SCALE IN FEET



6x Vertical Exaggeration

STATE OF TEXAS
RICHARD D. VARNELL
GEOLOGY
No. 4992
LICENSED PROFESSIONAL GEOSCIENTIST
9/13/13

REV.	DATE	DESCRIPTION	DR BY	APP BY

COOK-JOYCE INC.
ENGINEERING AND CONSULTING
812 WEST ELEVENTH 512-474-9097
AUSTIN, TEXAS 78701
TEXAS REGISTERED ENGINEERING FIRM F-883

PROJECT:
EXIDE FACILITY & ADJACENT PROPERTIES
FRISCO, TEXAS

SHEET TITLE:
GEOLOGIC CROSS SECTION D–D'

DES BY			SCALE: SEE BAR SCALE
DR BY	SDB		PROJECT NO. 12061.01
CHK BY	RDV		CJI NO. 12061004
APP BY	RDV		SHEET 1 OF 1 SHEETS
DATE ISSUED: 09-12-2013			FIGURE NO. NA
PURPOSE: GW CLASSIFICATION			

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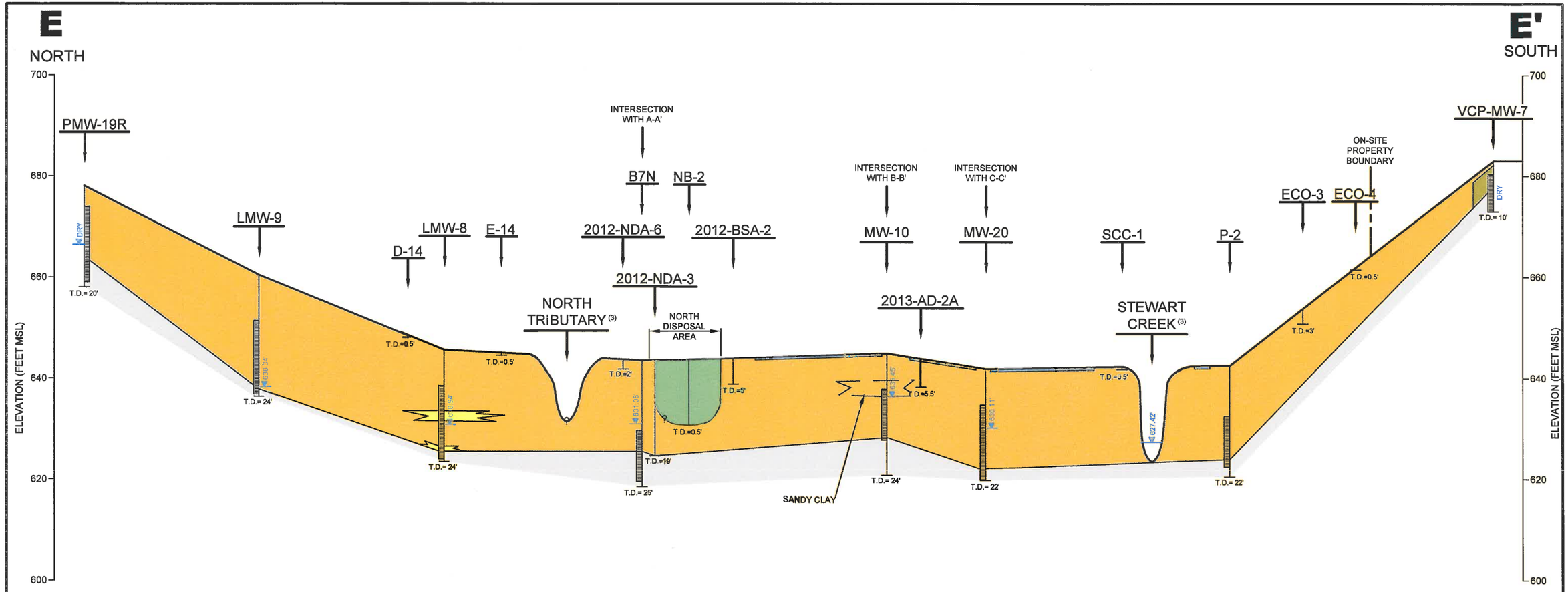
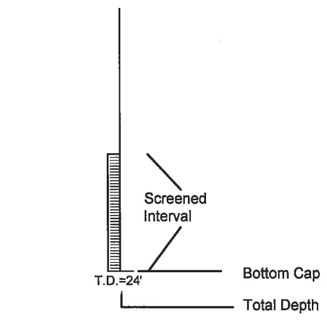


EXPLANATION

GENERALIZED LITHOLOGIC ABBREVIATIONS

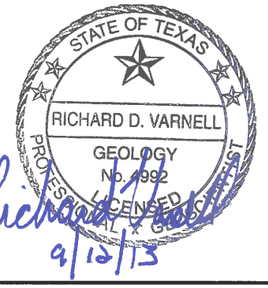
- Concrete
- Fill
- Clay or Silty Clay with Minor Occurrences of Clayey Silt, Clayey Sand, and Gravelly Clay
- Clayey Gravel or Sand
- Austin Chalk Limestone
- Eagle Ford Shale

MONITORING WELL CONSTRUCTION

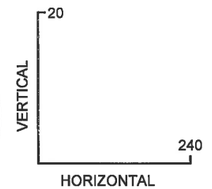


SOURCE: PASTOR, BEHLING & WHEELER, LLC DRAFT 22 MAY 2013 UPDATED GROUNDWATER RESOURCE EVALUATION MEMO.

Notes
1. Ground surface and creek bed topography are estimated. Monitoring well ground surface elevations were surveyed by a licensed surveyor.
2. See attached Figure for cross section location.
3. Stewart Creek water elevation inferred from Staff Gauge 1. Water present in North Tributary.
4. Depths given in feet below ground surface.
5. MSL = above mean sea level.
6. ? - Boundary Uncertain.



SCALE IN FEET



12x Vertical Exaggeration

REV.	DATE	DESCRIPTION	DR BY	APP BY

COOK-JOYCE INC.
ENGINEERING AND CONSULTING
812 WEST ELEVENTH 512-474-9097
AUSTIN, TEXAS 78701
TEXAS REGISTERED ENGINEERING FIRM F-883

PROJECT:
EXIDE FACILITY & ADJACENT PROPERTIES
FRISCO, TEXAS

SHEET TITLE:
GEOLOGIC CROSS SECTION E-E'

DES BY			SCALE: SEE BAR SCALE
DR BY	SDB		PROJECT NO. 12061.01
CHK BY	RDV		CJI NO. 12061005
APP BY	RDV		SHEET 1 OF 1 SHEETS
DATE ISSUED: 09-12-2013			FIGURE NO. NA
PURPOSE: GW CLASSIFICATION			

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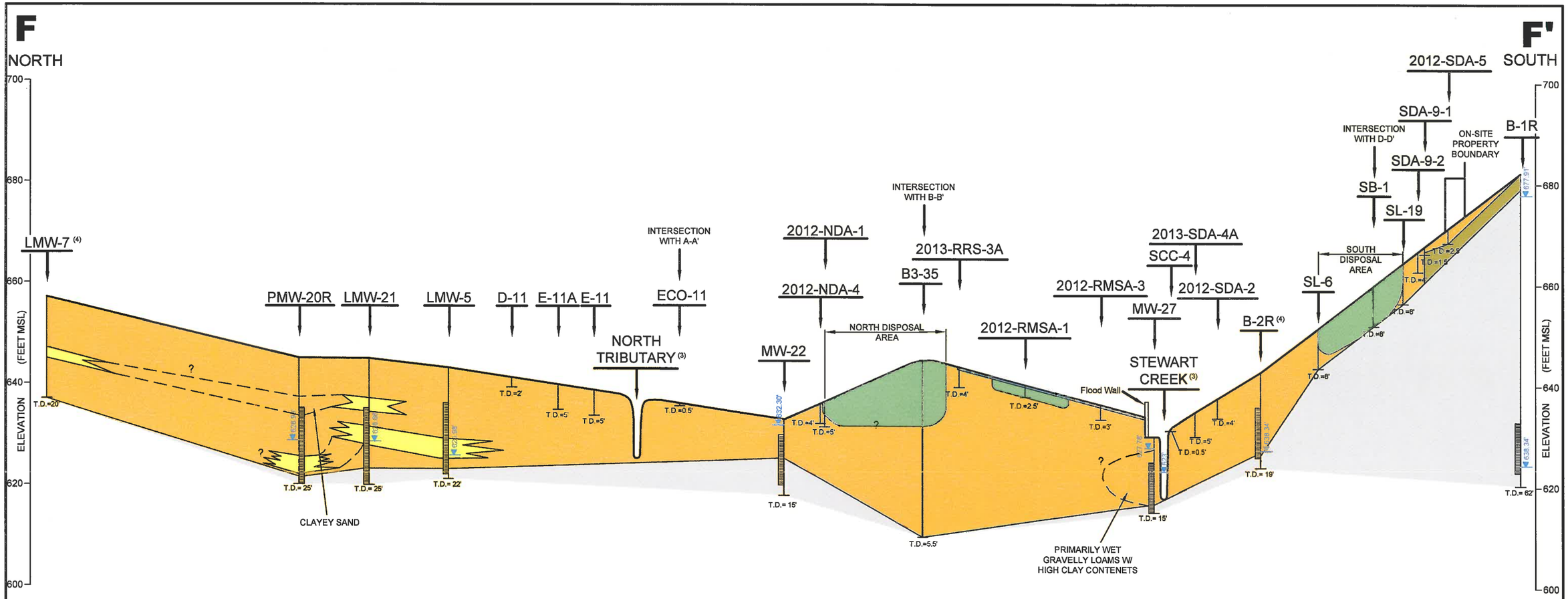


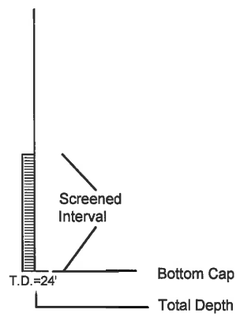
SOURCE: PASTOR, BEHLING & WHEELER, LLC DRAFT 22 MAY 2013 UPDATED GROUNDWATER RESOURCE EVALUATION MEMO.

EXPLANATION

GENERALIZED LITHOLOGIC ABBREVIATIONS

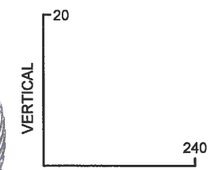
- Concrete
- Fill
- Clay or Silty Clay with Minor Occurrences of Clayey Silt, Clayey Sand, and Gravelly Clay
- Clayey Gravel or Sand
- Austin Chalk Limestone
- Eagle Ford Shale

MONITORING WELL CONSTRUCTION



Notes
1. Ground surface and creek bed topography are estimated. Monitoring well ground surface elevations were surveyed by a licensed surveyor.
2. See attached Figure for cross section location.
3. Stewart Creek water elevation inferred from Staff Gauge 1 and Staff Gague 2 measurements.
4. Plugged and adbandoned..
5. Depths given in feet below ground surface.
6. MSL = above mean sea level.
7. ? - Boundary uncertain.

SCALE IN FEET



12x Vertical Exaggeration

REV.	DATE	DESCRIPTION	DR BY	APP BY

COOK-JOYCE INC.
ENGINEERING AND CONSULTING
812 WEST ELEVENTH 512-474-9097
AUSTIN, TEXAS 78701
TEXAS REGISTERED ENGINEERING FIRM F-883

PROJECT:
EXIDE FACILITY & ADJACENT PROPERTIES
FRISCO, TEXAS

SHEET TITLE:
GEOLOGIC CROSS SECTION F-F'

DES BY			SCALE: SEE BAR SCALE
DR BY	SDB		PROJECT NO. 12061.01
CHK BY	RDV		CJI NO. 12061008
APP BY	RDV		SHEET 1 OF 1 SHEETS
DATE ISSUED: 09-12-2013			FIGURE NO. NA
PURPOSE: GW CLASSIFICATION			

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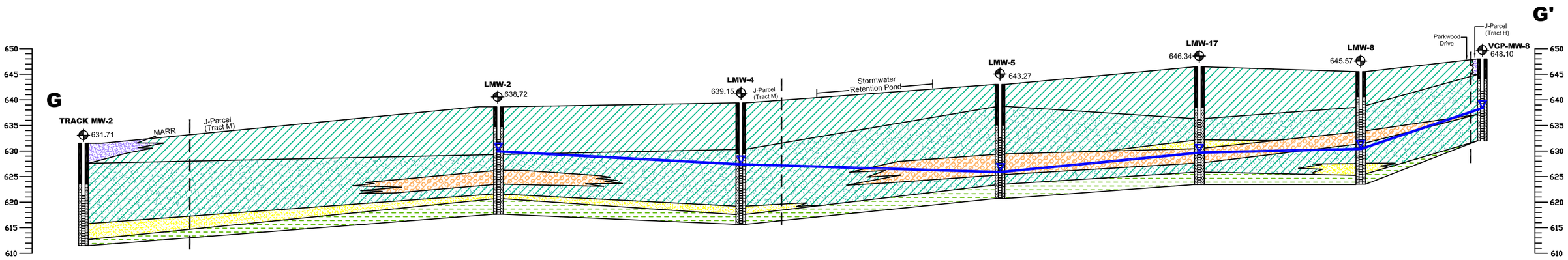

APPROXIMATE HORIZONTAL SCALE 1" = 220'

APPROXIMATE VERTICAL SCALE 1" = 20'

STATE OF TEXAS
RUSTY SIMPSON
GEOLOGY
LIC. #218
LICENSED
PROFESSIONAL GEOSCIENTIST

NOTE: GROUNDWATER ELEVATION DATE COLLECTED ON APRIL 29, 2013

LEGEND:

- CLAY
- CLAY WITH GRAVEL
- SAND
- SHALE
- CLAYEY GRAVEL
- FILL
- GROUNDWATER ELEVATION

Former Exide Technologies
Frisco, Collin County, Texas

SWG Project No. 0112C079G

Southwest GEOSCIENCE

CROSS SECTION G - G'

ATTACHMENT A – MORE INFORMATION REGARDING CLASS 2 AND CLASS 3 GROUNDWATER

ATTACHMENT A

The TCEQ Texas Risk Reduction Program Rule (30TAC 350.52) provides the following definitions:

> *"(2) Class 2 groundwater resource. Class 2 groundwater resources include:*
> *(A) any groundwater-bearing unit which is a groundwater production zone for an existing well located within 1/2 mile of the affected property and which is used to supply groundwater for human consumption, agricultural purposes or any purpose which could result in exposure to human or ecological receptors; or*
> *(B) any groundwater-bearing unit which is capable of producing waters with a naturally occurring total dissolved solids content of less than 10,000 mg/l and at a sustainable rate greater than 150 gallons per day to a well with a four inch diameter casing or an equivalent sustainable rate in gallons per day to a well with a smaller or larger diameter casing.*
> *(3) Class 3 groundwater resource. Class 3 groundwater resources include any groundwater-bearing unit which produces water with a naturally occurring total dissolved solids content of greater than 10,000 mg/l or at a sustainable rate less than 150 gallons per day to a well with a four inch diameter casing or an equivalent sustainable rate in gallons per day to a well with a smaller or larger diameter casing."*

The information presented in the Memo, and technical discussions contained in this document pertain to Exide's interpretation of the 150 gallon per day threshold value and the sustainability of the groundwater bearing unit. It should be noted that this threshold is a very low production rate; however, it is the indisputable standard set by TCEQ to determine the classification of the groundwater bearing unit. Exide concedes within the Memo that this threshold is exceeded in several locations across the site; however, they present information suggesting that the groundwater bearing unit is "limited" in its hydrogeologic extent and the rate is therefore not sustainable.

Limited Hydrogeologic Extent is a concept introduced by the TRRP-8 Guidance Document "Groundwater Classification". The relevant section of TRRP-8 reads as follows:

> *"Certain GWBUs may be demonstrated to be insufficiently extensive laterally and/or volumetrically and/or to be hydraulically isolated from other GWBUs and other sources of recharge such that the GWBU can not sustain the required long-term daily withdrawal rate to be a Class 1 or a Class 2 groundwater resource. Demonstrations of limited hydrogeologic extent must be based on both site-specific and regional hydrogeology, including detailed hydrostratigraphic analysis. Hydrogeological analysis of a sedimentary GWBU should include placement of the hydrostratigraphic unit within its overall stratigraphic context. The geometry of the hydrostratigraphic unit must be determined on a site-specific basis and the demonstration must rely on the limited extent of that geometry.*
>
> *Examples of qualifying hydrostratigraphic units include lobes of permeable alluvial fans isolated by intercalated impermeable units, perched groundwater zones, and other isolated zones of saturation that are not used as groundwater resources."*

#

Exide's Groundwater Resource Classification document relies entirely on the concept of limited hydrogeologic extent in an attempt to downgrade the groundwater classification at the site from Class 2 to Class 3. The City's position is that Exide's conclusion cannot be technically proven in the absence of long term pumping tests in the vicinity of the wells that are most likely to produce groundwater at 0.1 gallons per minute on a long term daily withdrawal. Until the groundwater

bearing unit is proven to have a boundary condition preventing a sustainable rate of 150 gallons per day, the premise of limited hydrogeologic extent can only be considered a theory in need of supporting site specific evidence. Given the magnitude of the difference in cleanup goals based on the downgrade in groundwater classification, more data is required to support the current theory of limited hydrogeologic extent.

ATTACHMENT B – B5N YIELD TEST DATA

DRAFT

MONITORING WELL B5N
PRELIMINARY CONSTANT DISCHARGE (0.1 gpm) PUMPING TEST READINGS
EXIDE FRISCO RECYCLING CENTER

Date	Time	Cumulative Time (Min)	Cumulative Volume (gal)	Water Level (BTOC)
3/13/2012	9:50	0	0.0	9.47
	9:51	1	0.1	9.60
	9:54	4	0.4	9.60
	9:57	7	0.7	6.94
	10:00	10	1.0	9.58
	10:05	15	1.5	9.58
	10:10	20	2.0	9.58
	10:20	30	3.0	9.57
	10:40	50	5.0	9.58
	11:35	105	10.5	9.61
	12:20	150	15.0	9.61
	13:50	240	24.0	9.61
	14:50	300	30.0	9.59
	15:50	360	36.0	9.57
	16:50	420	42.0	9.57
	17:50	480	48.0	9.59
	18:50	540	54.0	9.58
	19:50	600	60.0	9.59
	20:50	660	66.0	9.60
	21:50	720	72.0	9.61
	22:50	780	78.0	9.62
	23:50	840	84.0	9.62
3/14/2012	0:50	900	90.0	9.62
	2:50	1020	102.0	9.62
	4:50	1140	114.0	9.64
	6:50	1260	126.0	9.65
	7:50	1380	138.0	9.65
	8:50	1500	150.0	9.65
	9:50	1440	144.0	9.65
	10:50	1500	150.0	9.65
	11:50	1560	156.0	9.66
	13:50	1680	168.0	9.66
	15:50	1800	180.0	9.67
	17:50	1920	192.0	9.97
	19:50	2040	204.0	9.67
	21:50	2160	216.0	9.68
	23:50	2280	228.0	9.68
	2:50	2460	246.0	9.68
	5:50	2640	264.0	9.68
	9:50	2880	288.0	9.69

ATTACHMENT C – FIGURE 9 FROM TRRP-8

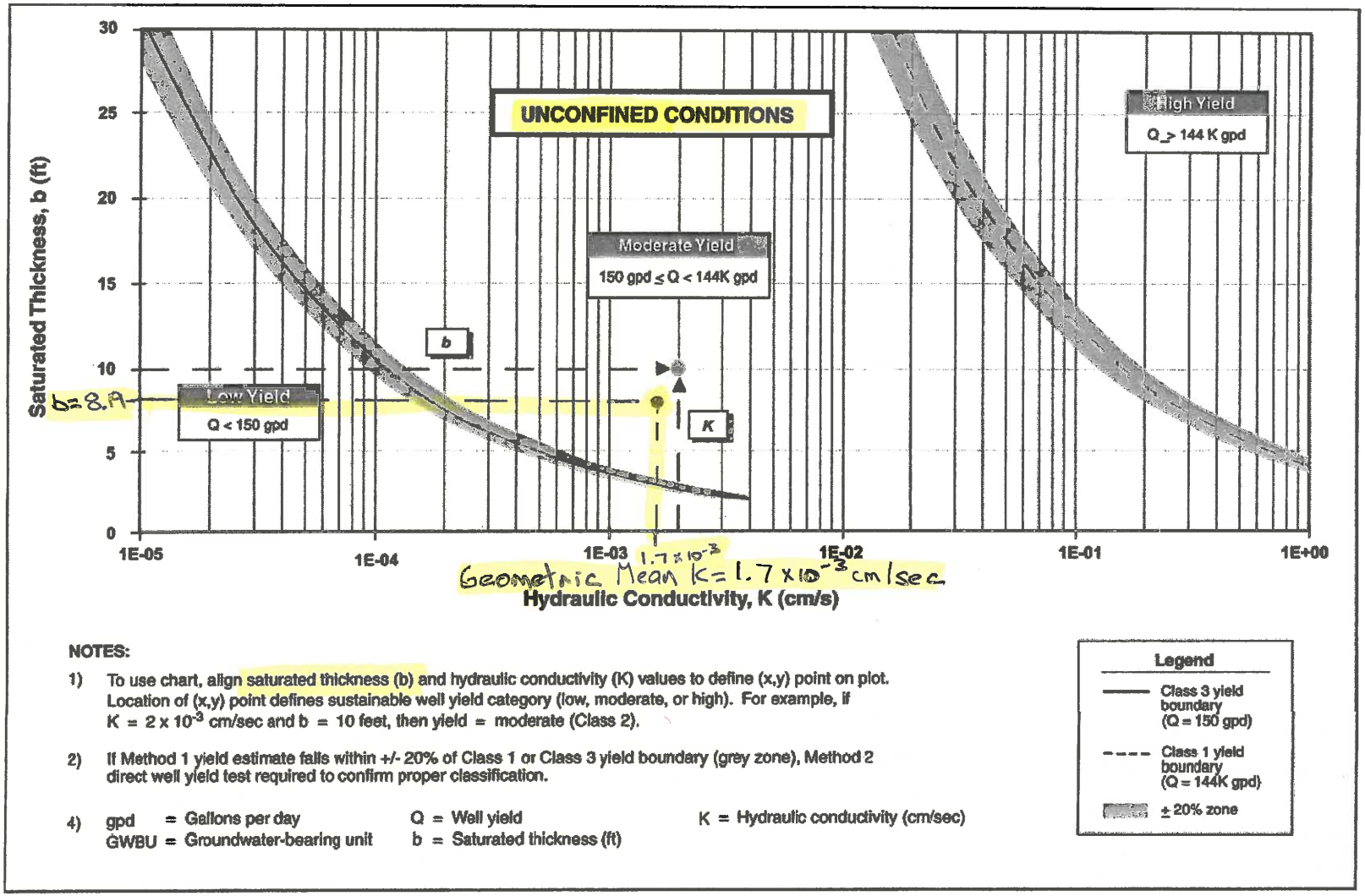

Figure 9. Unconfined Conditions

Attachment D

R&R
RUSSELL & RODRIGUEZ, L.L.P.
ATTORNEYS AT LAW

1633 WILLIAMS DRIVE
BUILDING 2, SUITE 200
GEORGETOWN, TEXAS 78628

Email: krussell@txadminlaw.com

PHONE (512) 930-1317
FAX (866) 929-1641
WWW.TXADMINLAW.COM

June 28, 2013

Via Hand Delivery

Mr. Gary Beyer, PG
TCEQ Remediation Division
MC-127
12100 Park35 Circle, Bldg. D
Austin, Texas 78753

Re: Exide Draft Screening Level Ecological Risk Assessment
Exide Technologies Former Operating Plant
7471 South 5th Street, Frisco, Texas

Dear Mr. Beyer:

The City of Frisco (City) is concerned that the above referenced SLERA submitted by Exide on May 10, 2013 does not adequately address ecological impacts on Stewart Creek from the former Exide battery recycling facility. The City is providing the following observations that it believes TCEQ should take into account when reviewing the May 10 SLERA. The City has made Exide aware of its concern with all of these issues and assumes they will be addressed by Exide in a supplemental SLERA submittal.

Observation 1

The reason given by Exide for not including downstream Stewart Creek data in the SLERA was that the information was provided too late to incorporate. Impacts of past Exide facility activities on Stewart Creek are not newly discovered information. For example, here is some information that was available before the SLERA was submitted:

1986: Southwestern Laboratories sampled Stewart Creek within the boundaries of the Exide (then GNB) facility. Dredging was recommended based on findings and that portion of Stewart Creek was dredged in three events to remove impacted sediment.

1999: JDC Consulting, Inc. conducted an investigation of Stewart Creek within and downstream of the Exide facility boundaries. A subsequent Corrective Measures Implementation Report documented the removal of 16023 tons of contaminated material from Stewart Creek, including 521.3 tons of slag.

EPA 2009: An EPA Corrective Action Inspection identified "liquid seeping beneath the flood wall resulting in standing water and white crystalline substance on the ground between the wall and the creek". In March 2010, EPA collected samples of saturated soil and a white crystalline substance between the Exide flood wall and Stewart Creek. The analytical results documented that three samples contained concentrations that exceeded the EPA media specific soil screening level for lead in industrial soil of 800 mg/Kg.

March 28, 2011: W&M Environmental Group, Inc. "Suspect Slag Sampling Report – Stewart Creek West Segment" identified the presence of slag material on the banks of Stewart Creek within the Exide facility boundary. Samples identified as "probable slag" collected east of the BNSF railroad bridge exhibited total lead concentrations ranging from 11,500 mg/Kg to 102,000 mg/Kg.

TCEQ 2011: Based on the TCEQ inspection in 2011, dead vegetation was noted near a crack in the Exide flood wall where a liquid was discharging. One soil sample was collected from the embankment where the dead vegetation was observed and a total lead concentration of 3,560 mg/Kg was reported (TCLP 2.86 mg/L). Battery chips were observed along the embankment of Stewart Creek west (downstream) of the Exide facility.

November 2011: In order to evaluate planned Stewart Creek modifications associated with the proposed Grand Park development, the City contracted with SWG to collect thirty sediment samples in Stewart Creek from the BNSF railroad bridge to Stonebrook Parkway. Those sediment samples documented arsenic, cadmium and lead above TCEQ Ecological Benchmarks and lead and cadmium above TCEQ Second Effects Levels. Battery chips and potential slag were documented along the entire creek channel at various locations. At the City's request, SWG submitted laboratory analytical data, and maps showing sampling locations, from the November 2011 sediment sampling event to Exide in mid-January, 2012.

Observation 2

Only air dispersion/deposition is listed in the SLERA as the release mechanism for cadmium and lead. However, it is well documented that discarded battery chips and slag are sources of soil contamination at the Exide facility and surrounding areas. The SLERA excludes battery chips and slag with high concentrations of lead and cadmium by stating that they will be addressed separately. They should be addressed in the SLERA as an obvious ecological risk.

Observation 3

The SLERA excluded data known to exceed baseline ecological protective concentration levels in Stewart Creek sediments downstream of the facility. TRRP Regulatory Guidance for

Ecological Risk Assessment (RG366/TRRP 12) indicates that the on and off-site extent of environmental media needs to be assessed. Inclusion of downstream sediment concentrations is fundamental in the process of determining the Ecological PCL for the Affected Property. Downstream sediment impacts are considered "Affected Property" and should be considered in the APAR process. Without the benefit of sediment data related to the "hot spots" in downstream sediments, TCEQ's review is necessarily limited to samples collected from surface water and sediment in an area that was previously remediated, as detailed in the JDC Consulting Stewart Creek Corrective Measures Implementation, 2000. Downstream sediment impacts must be considered in the Ecological Risk Assessment.

Also, references in the SLERA to "hot spots" does not elaborate on the presence of battery chips and slag material from the Exide facility which have been documented in Stewart Creek. In addition, the SLERA does not mention or comment on the TCEQ documented presence of slag on the banks of Stewart Creek east of the BNSF railroad bridge that were identified in the 2011 W&M report. These areas should be considered ongoing sources of potential impacts to Stewart Creek and the SLERA should have included the offsite impacts on Stewart Creek discovered during prior investigations.

The City is particularly concerned that the SLERA states: "It is uncertain if the source of the lead and/or cadmium associated with the hot spots originated from the FSCWWTP or the former operating plant. Additional evaluation, outside of this SLERA or APAR, is recommended to address potential localized effects in any downstream hot spot areas."

This statement appears to attempt to attribute all or part of the Exide facility impacts on Stewart Creek to the former Stewart Creek Wastewater Treatment Plant. The battery chips and slag identified in Stewart Creek did not come from the FSCWWTP. In addition, battery chips and slag were identified in Stewart Creek upstream of the FSCWWTP. The Exide facility is the only source of battery chips and slag in Stewart Creek.

Observation 4

The SLERA Site History section should have some discussion discussion of the relocation of Stewart Creek prior to construction of the Exide facility since this filled area could provide a conduit for subsurface flow of impacted water into Stewart Creek.

Observation 5

The SLERA should have some discussion of the selenium concentration of 0.489 mg/L detected in LMW-9 during the March 2013 sampling event since this is an ecological impact related to groundwater.

Observation 6

Concentration terms were developed in the SLERA by excluding data for various reasons. The SLERA should include a rigorous review of the datasets available, previous samples taken, and specific reasons for exclusion of data/samples.

Conclusion

Based on the above noted deficiencies in the May 10, 2013 SLERA, a Tier 3 Ecological Risk Assessment is indicated considering the extent of documented Exide facility impacts on Stewart Creek. It will be difficult to review the draft APAR without a complete, accurate SLERA.

Please provide copies of this submittal to appropriate TCEQ staff. If you have any questions regarding this submittal, please do not hesitate to contact me or the City representatives.

Respectfully,

Kerry E. Russell

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Mr. George Purefoy, City Manager
Mr. Richard Abernathy, City Attorney
Ms. Christine Graessle, Exide
Mr. Matt Love, Exide
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