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March 3, 2014

Lorrie Ruiz, Director
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Irvine Unified School District
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RE: COMMENT on “Preliminary Environmental Assessment Report For: Proposed Irvine Unified School District Proposed High School #5 — Site A”

Dear Ms. Ruiz:

Attached is my Comment on “**Preliminary Environmental Assessment Report For: Proposed Irvine Unified School District Proposed High School #5 — Site A,**” January, 2014.

I have prepared my attached Comment as a California Licensed Professional Civil Engineer (C25246) who holds a Ph.D. in engineering, and is a former (1967-70) Assistant Professor of Civil Engineering. My only interest in the matter of the high school siting is in the health and safety of the proposed high school’s faculty, staff and students over the long term. I have no financial or political conflict-of-interest. I’m not running for any elected political office. I have not been paid for my research and other efforts on this project. I am not affiliated with IUSD, FivePoint Communities or the Irvine PTA and I have no children or close relatives attending or about to attend an IUSD school. However, I have been a resident of the City of Irvine since 1976.

A major awareness and interest in my life has been the avoidance of carcinogens and other toxins in our environment and in our food and water. As Superintendent Terry Walker has duly noted, there have been many opinions from laypersons, as well as conceptions and misconceptions disseminated from many sources on this subject. It is wise to note that those sources that claim there are no toxic wastes in the capped landfill have not referenced any Department of the Navy (DON) documents to support their thesis. The considerations in this letter are all based on publicly available DON reports that have no reason and no conflict-of-interest that would serve to promulgate one point of view over another, other than providing a safe and healthful environment for our city’s schools.

I have been researching DON documents since August, 2013, and have either perused or read over 10,000 pages of documents relating to only IRP Site 3. The investigations, planning and work performed by the DON and its contractors on IRP Site3 are complex, cover more than a 15-year period, and as explained in this Comment, describe aspects that have surely led to the misunderstandings that have become widespread in Irvine over this project.

continued...

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Although I began this work of my own volition, later, during its course, I began providing materials to Irvine City Councilmember Larry Agran, who specialized in Public Interest Law at Harvard Law School and served as Legal Counsel to the California State Senate Committee on Health and Welfare, as well as an instructor in health law at UCLA. He was also Director of UCLA's History of Cancer Control Project. Extending his research that began while in these positions, he wrote a book: "The Cancer Connection : And What We Can Do About It," Houghton Mifflin, 1977, that is just as relevant today as when it was published. It's still available as a used book on Amazon. Councilmember Agran's opinions are not those of a "layman," but rather those of an expert, particularly when issues of risk from environmental toxins and their transmission are concerned. I appreciate his advice and encouragement in producing this Comment.

My Comment is in a standalone format, so anyone reading it will understand the context of my remarks without either having to be knowledgeable about the proposed high school project or having to read other documents to become knowledgeable.

I also want to acknowledge Phyllis Agran, MD, MPH, FAAP, Professor Emeritus, UCI, and past President of the California American Academy of Pediatrics, Orange County (2009-11), who provided helpful documentation and advice.

Sincerely,

Harvey H. Liss, P.E., Ph.D.

CC:

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COMMENT
on
Preliminary
Environmental
Assessment
Report
(PEA)

for:

Proposed
Irvine Unified School District
High School #5—Site A

prepared by:
Harvey H. Liss, P.E., Ph.D.
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March, 2014

Submitted by:

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March 3, 2014



Several diagrams and tables included with this Comment were extracted from public documents and are included in this Comment for convenience of the reader.

COMMENT

on

Preliminary Environmental Assessment Report (PEA)

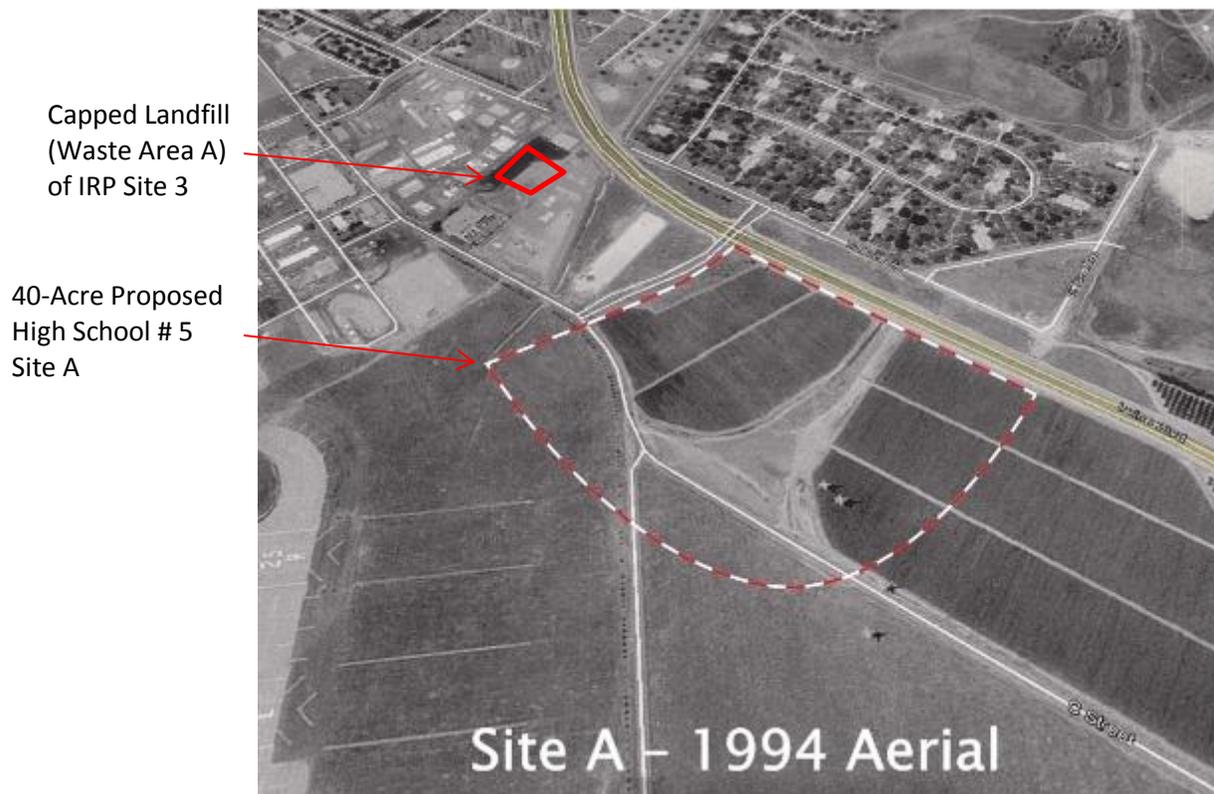
for:

Proposed Irvine Unified School District High School #5—Site A

March 3, 2014

INTRODUCTION

Irvine Unified School District is proposing to build a 2,600 student school for grades 9 through 12, including classrooms, administrative building, recreational and sports amenities, etc., on an approximately 40-acre site located on the eastern side of the former Marine Corps Air Station (MCAS) El Toro, in the City of Irvine. The project site, known as the Proposed High School # 5 Site A, lies along Irvine Boulevard near the intersection of the former Desert Storm Drive [Fig 1]. Immediately on the other side of Desert Storm Drive is a Federal Superfund Program site, a landfill, designated as Installation Restoration Program (IRP) Site 3.



From the Department of the Navy's (DON) Final Remedial Action Completion Report (RACR) p.1-2, 3 [Note 1], IRP Site 3 is described as follows:

“Former MCAS El Toro was commissioned in 1943 as a Marine Corps pilot fleet operation training facility. The mission at former MCAS El Toro involved the operation and maintenance (O&M) of military aircraft and ground-support equipment. These activities generated oils, solvents, paint residues, hydraulic fluid, used batteries, and other waste (MCAS El Toro, 1991). Wastes were placed in unlined landfills and burned or covered with soil. Former MCAS El Toro provided material and support for Marine Corps aviation activities until the base closure on July 2, 1999. Former MCAS El Toro was annexed into the city of Irvine in November 2003.

...

“The IRP Site 3 landfill, also referred to as the Original Landfill, was active from 1943 until 1955. It was the original former MCAS El Toro landfill, which was operated as a cut-and-fill disposal facility. IRP Site 3 potentially contains a variety of materials disposed at assorted locations within the landfill including metals, incinerator ash, **solvents, paint residues, hydraulic fluids, engine coolants**, construction debris, **oily wastes**, municipal solid waste, and various inert solid wastes. Prior to the remedial action, the site was divided into four units. Unit 1 was the principal area of the landfill operations and was located to the east and west of Agua Chion Wash. Review of aerial photographs shows that waste disposal occurred sporadically over time at several locations within Unit 1. Unit 1 contained one main waste area [Waste Area A] and several smaller, outlying waste areas [later called Areas B through F and A1 through A3].” [emphasis added]

IRP Site 3 was remediated (or restored) by consolidating several landfills [see Fig 1] (Area B through F and A1 through A3) surrounding the central landfill (Waste Area A), onto Waste Area A, then capping Waste Area A with a membrane and two feet of soil cover. (Remediation or restoration does not necessarily mean removal of anything) IRP Site 3 now encompasses approximately 4.2 acres that include the Area Requiring Institutional Controls (ARIC), as defined in the RACR (Shaw, 2012) [Note 12].

MAJOR ISSUES

This comment report addresses seven major issues, as follows:

1. **TOXIC WASTE?** Whether the capped landfill (Waste Area A) of IRP Site 3 actually contains toxic waste;
2. **ANALYSIS of the Smoking Gun:** Discussion of the omission of the PEA to perform any analysis or discussion of its remarkable findings;
3. **RISK?** The risk to Site A (proposed school site) of the adjacent landfill containing toxic wastes;
4. **REQUIREMENTS FOR ADDITIONAL PRE-CONSTRUCTION SOIL TESTING!**
5. **ON-SITE vs. OFF-SITE TESTING and DTSC RESPONSIBILITY** The restriction of soil sample testing only to onsite testing, and only at one point in time, and the Department of Toxic Substances Control's (DTSC) responsibility to protect the public.

6. **PRIVATE “PUBLIC HEARING”** The lack of an effective public hearing for the PEA;
7. **CONTAMINATED PUBLIC DISCOURSE:** The widespread misinformation campaign, by whoever orchestrated it, and for whatever reasons, discouraged public concern and public participation, and appears to be leading the IUSD Board to make decisions based on inaccurate information.

1. TOXIC WASTE?

Is there toxic waste in IRP Site 3? This is a question not addressed in the PEA. First, it should be understood that the now capped landfill, which is part of IRP Site 3, is referred to as Waste Area A in DON documents. There were actually several landfills surrounding Waste Area A, explained in the PEA Introduction, that were excavated and consolidated on top of Waste Area A, which was then capped. Waste Area A, itself, **was never excavated, and only had a few shallow soil samples tested [Note 6a]**, and in which VOCs, petroleum hydrocarbons, pesticides, herbicides, and metals were detected.

The description of Waste Area A (the capped landfill) in the PEA Introduction indicates what the landfill was used for. During wartime, one would not expect military personnel to have any compunction about tossing their used solvents or anything else into the landfill.

Monitoring of ground water and soil gas is being performed, periodically, in wells located outside Waste Area A (capped landfill). The DON Long Term Monitoring Report (LTM), Nov 2013 [Note 2, p.3-4,5, also Fig 7] reports, on 10/03/11, estimated concentrations of the solvents, m/p-xylenes at 0.43 µg/L, o-xylene at 0.28 µg/L, toluene at 0.67 µg/L and trichloroethylene (TCE), a degreaser, at 0.3 µg/L, which increased to 1.8 µg/L on 9/25/12 in soil moisture as detected by a lysimeter [03LYS2] [a lysimeter detects VOCs in soil moisture] bored about 150 feet from the edge of the capped landfill closest to Site A. Another lysimeter [03LYS4] located at the edge of the capped landfill opposite from Site A, detected carbon disulfide at a concentration fluctuating between an estimated 0.27 µg/L and 0.39 µg/L between 10/03/11 and 9/21/12; and TCE was detected fluctuating between 5.7 and 6.3 µg/L between the same two dates. And, low levels of benzene was also found outside the capped landfill in groundwater in well 04_DGMW66A [Fig 6]; however, the LTM Report also notes: “This well is located immediately downgradient from the former Truck Fueling Area (TFA). The TFA plume is a petroleum corrective action site...not a result of a release from IRP Site 3.

The solvents found are consistent with the use of solvents by military personnel to clean and degrease aircraft components and other machinery.

Because of its belief in the presence of toxic waste in the capped landfill from direct and indirect evidence, and certainly confirmed by tests performed outside the now capped landfill, the DON has determined that Institutional and Engineering Controls [ICs and ECs] are required for the next 30 years to protect public health. [Note 12]

QUESTION #1: Why would the DON require ICs and ECs if they believed there were no toxins in the capped landfill?

2. ANALYSIS of the Smoking Gun:

The IUSD's recently released Preliminary Environmental Assessment (PEA) reports that soil samples taken from a single well (SG-2) [Fig 10] at the edge of Site A (the proposed high school #5 site), along the border closest to the capped landfill, and from no other well, contained four of these very same toxins found outside the capped landfill, toluene, p,m-xylenes, o-xylene. [Fig 11] This obviously suggests that those toxins came from the capped landfill, several hundred feet away. Toluene, xylene and benzene are all solvents that are consistent with what was probably used by the military personnel to clean aircraft engines and other components. Toluene and the xylenes are now known as neurotoxicants that have no safe levels of exposure, especially for the developing brains of young people, while benzene is a powerful carcinogenic.

This discovery should have raised substantial questions as to how those toxins that were found outside the capped landfill got to proposed school Site A; and if there are greater concentrations in the immediate vicinity on Site A that should provoke additional nearby testing. The nearest soil gas well (SG-5) is about 200 feet from SG-2, in which no such toxins were detected. There is no such analysis or discussion in the PEA, as if those toxins were accidentally dumped there from a pail of solvents and got to the 15 foot bgs [below ground surface] level without passing through the 5 foot bgs level, since no toxins were detected at the 5 foot deep level, and could just be ignored.

QUESTION #2: How would one explain these same four toxic solvents (toluene, p,m-xylenes, o-xylene) found emanating from the capped landfill be found, all together in one well, along the boundary between Site A and IRP Site 3, not being found in the other test wells that were bored in Site A?

QUESTION #3: Where would these toxins come from if not from the capped landfill (Waste Area A)? And how do we know how much remains in Waste Area A?

QUESTION #4: What caused the concentration of some of these solvents found increase over time?

QUESTION #5: Why isn't it important to consider what the future may portend for the concentration levels of these toxins? Isn't this what the concept of risk is all about?

Chloroform detected in groundwater well 03_DGMW65XA [Fig 6] showed an increase in concentration from undetectable to 0.25 mg/l (estimated) between 10/3/11 and 9/20/12, hardly an indication of a depleting source or unchanging pathway. Chloroform was found on Site A in two wells (SG-15 and 16), and in only those two wells; both those wells are located along the furthestmost boundary of Site A from IRP Site 3. However, chloroform can be produced from natural processes, so it did not necessarily come from the capped landfill. [Fig 11]

QUESTION #6: Given that the groundwater under Waste Area A averages about 230 ft. bgs [below ground surface], can toxins migrate laterally in the unsaturated soil layer independently of the direction of groundwater flow?

3. RISK?

There are two components of risk: a) The first component of risk is the probability of something “bad” happening, such as an earthquake that upsets the contents of the landfill creating either new pathways or enlarging existing pathways for the toxins to migrate through the air or the soil toward the school site. This would expose the faculty, staff and students of the adjacent high school to the toxic waste. b) The second component of risk is if something bad does happen, caused by what is most probable, an earthquake, how bad can it be? Tied to this second component is whether the affected parties will even know if toxins have escaped and are headed their way!

QUESTION #7: If, say, after an earthquake, toxins escape the capped landfill either through the air through a soil pathway and make their way to Site A, how would the occupants of the school be informed?

QUESTION #8: If toxins are discovered emanating from school fields or entering the buildings, what could be done about it? Would the school have to be closed while the toxins are removed?

There are also other bad things that could cause the release of toxic wastes that have not even been considered as possibilities.

For example, the most recent periodic inspection of the cap [Note 3] revealed:

“2.1.3 Erosion

...numerous animal burrows were noted at both IRP Sites 3 and 5. ...a maintenance program using bait is ongoing to reduce the burrowing animal population. ...New burrows will continue to be monitored and filled during inspections.

QUESTION #9: Are these burrowing animals capable of chewing through the membrane cap? Have these burrowing animals already chewed through the membrane? Is there any way to be sure that burrowing animal tunnels remain undetected by an inspection? How thorough has the surface inspection of the cap been (the cap, itself, is about 1.6 acres, and animals can burrow from outside the cap)?

A characteristic of unknown events is that the possibilities are also unknown; hence, they can't be protected against, with many examples related in the book, “The Black Swan” [Note 4]. A landfill containing toxic waste is an ever-present danger with unpredictable risks to an immediately adjacent school that is occupied full time.

4. REQUIREMENTS FOR ADDITIONAL PRE-CONSTRUCTION SOIL TESTING?

On page vii of the PEA's Executive Summary we find:

“Based on the PEA objectives, the environmental quality goals of Irvine Unified School District, and the results of the PEA investigation, The Planning Center|DC&E has determined that no further assessment is needed on the site. Therefore, The Planning Center|DC&E recommends that, per California Education Code Section 17213.1, Section 3, the PEA be approved and that no further assessment be required.

Yet, ironically, these contradictory statements appear on page 9 of Appendix D, Health and Safety Plan, we find:

5.1 SOIL SAMPLING ACTIVITIES

5.1.1 Soil Sampling

Soil samples will be collected on the approximately 10-acre area at twenty-two (22) sample locations to address the historical agriculture use. Soil sampling will be conducted in general accordance with the guidelines provided by the DTSC in *Interim Guidance for Sampling Agricultural Fields for School Sites (Second Revision)* (DTSC 2002). All soil samples will be collected from the ground surface to approximately 6 inches below ground surface (bgs).

...

5.2 SOIL GAS SAMPLING ACTIVITIES

5.2.1 Soil Gas Sampling

Soil gas samples will be collected at ten locations at a depth of 5 and 15 feet bgs to assess if the offsite groundwater plume (Tank Farm 5), former jet fuel pipeline, and historic base operations including the former landfill to the north could be impacting the proposed school site. [emphasis added] Soil gas samples will be collected and analyzed for volatile organic compounds by a mobile laboratory using EPA Method 8260B. Soil gas sampling will follow the Advisory - Active Soil Gas Investigations (DTSC and RWQCB 2012). The soil gas samples collected along the northern boundary, SG-1 – SG-4 will also be analyzed for methane by EPA Method 8015M or a similar method and for hydrogen sulfide using a handheld device. All samples will be analyzed for volatile organic compounds by EPA Method 8260B. One continuous core will be collected and logged by a Professional Geologist.

QUESTION #10: How can Site A be approved as a school site with no further assessment required, while we find that further assessment is required before the construction workers can begin their work? Or, how can the PEA be ready for approval without first performing the further required testing listed above?

Further, on page 11 of Appendix D, we find:

6. Chemical Hazards

“The presence of chemical hazards at the site has not been confirmed; however, the primary suspected potential constituents of concern associated with the site are metals and organochlorine pesticides. **The list of chemicals of concern for the site will be reassessed, as more data becomes available.** Brief toxicological profiles of the major constituents of concern are included in Appendix E. Chemical and physical characteristics of these compounds are presented in Table 1.

“Potential exposures to these chemicals during field activities include the following:

- Dermal contact with and accidental ingestion of potentially contaminated rinsate and residue during decontamination and sampling; and
- Splash hazards during decontamination.

To protect workers from eye and skin contact, skin absorption, and accidental ingestion of airborne dust, PPE will be used as outlined in Section 8.0.

6.1 HAZARD ASSESSMENT

Site work will be initiated in Level D protection. If unusual odors or symptoms are noted in the field, and engineering controls cannot reduce potential hazards in the breathing zone, the level of protection will be upgraded to Level C. If an upgrade to Level B is required, field activities will

stop and the site will be evacuated. If Level B is required, the project will be stopped and the current operating procedures will be assessed by the SSO, the Health and Safety Officer, and the Health and Safety Committee. If it is determined that Level B PPE is required, a subcontractor will be retained to conduct this supervised work.

QUESTION #11a: Why do the workers on Site A need to protect themselves from various toxins, but the occupants of the school won't need to similarly protect themselves?

QUESTION #11b: The first paragraph under 6. Chemical Hazards, states clearly that more data is required." Why isn't the PEA being submitted after the missing data becomes available? How can the DTSC approve the PEA with incomplete data being provided?

QUESTION #11c: How can IUSD hold a public hearing when the PEA Report's data collection is incomplete by its own requirements, and much further testing is required?

5. ON-SITE vs. OFF-SITE TESTING and DTSC RESPONSIBILITY:

Unfortunately, the CA Education Code [Note 6, par (1)], is only concerned with hazardous waste on the school site, itself, at one point in time, and, illogically, has no requirement that there be no hazardous waste adjacent to a school site. The proposed school site has to be certified by a consultant that the offsite hazardous material poses no threat to public health. This required opinion does not have to be an objective consideration, but merely an opinion from a paid consultant who has a built-in conflict-of-interest, because the consultant is being paid by the organization requesting the opinion, and who has a vested interest in the project moving forward.

The DTSC, as well, appears to only be concerned with on-site hazardous waste, and only at the moment of consideration, although they have been given the legal authority [Note 6, par (4), (c)] to prevent school construction on a site adjacent to a landfill that contains hazardous waste in order to protect the health of a school's children against the health risk from not only low-levels of current contamination, but from the risk of future contamination from a nearby source.

Harvey Liss and Larry Agran met with members of the staff of the Cypress Office of the DTSC at Irvine City Hall, on January 23rd, at which they iterated the difficulty of establishing their own school-siting guidelines, even though state law permits them to do so.

QUESTION #12: Why doesn't the DTSC require soil testing of the contents of the capped landfill or further testing of Site A and the area between Site A and the capped landfill to discover the source of the toxins discovered, and perhaps mitigate or obviate the possibility of future increased levels of contamination?

QUESTION #13: Why isn't the DTSC concerned about the possible increase of toxin concentrations in the future, after a disturbance of the landfill due to recurrent earthquakes and the inevitable "big" one, or even during construction of the school if foundation piles will be driven?

QUESTION #14: It seems that many of the recent hazardous contamination problems California schools have been experiencing are a result of nearby hazardous wastes not those located on the school site, itself. Why doesn't the DTSC establish guidelines that are truly protective of the occupants of a school and take into account the possibility of contamination from nearby sources?

6. PRIVATE "PUBLIC" HEARING:

It's hard to imagine a more secretive "public" hearing. The only public announcement was a small ad in tiny type on the public announcements page of the OC Register and Irvine World News that virtually no one has read, unless they accidentally noticed it while seeking to see if their name-change announcement was published. The IUSD did not effectively publicize the hearing at all. On their website, to find the announcement you had to search for "PEA." If you searched for "hearing," the public hearing for the PEA comes up as the third item on the first page of search results; however, there is no heading, only the link. You would have to know exactly what you're looking for to find it. [The IUSD website was changed to announce the availability of the PEA on its homepage; however, too late for the public hearing.]

And to put the public hearing as an agenda item on the regular meeting, where the agenda is not published until a few days before the meeting is outrageous. No wonder this commenter was the only speaker during the public hearing. The DTSC should require a true public hearing, with actual notification, like a notice in the IUSD newsletter and on the home page of their website, plus an email to all constituents, just like they do when they want a bond approved by the public.

QUESTION #15: Why doesn't the DTSC require a true public hearing, with the public actually being informed about the meeting with as much publicity as the misinformation that has been disseminated by the IUSD? The criteria could be to have equivalent notifications to those when the school district informs the public about a desired bond approval. Wouldn't the health of the students, teachers and staff of a school be just as important as its funding?

7. CONTAMINATED PUBLIC DISCOURSE:

This capped landfill has been characterized as not containing toxic wastes or as having been "remediated" or "restored" (hoping, presumably, that the public would misinterpret the use of these words as used by the DON) by IUSD staff in a study session [Note 13], by City of Irvine staff in a Memo to the City Council, by an employee, Chris Johnson, of the consultant who performed the "remediation" (not cleanup) work of IRP Site 3, and proliferated by the media, particularly the Irvine World News, in an article published Feb 6, 2014, p.4.

IRVINE WORLD NEWS (IWN) ARTICLE of FEB 6, 2014, p.4: [Note 7]

The Irvine World News article ("Is The Nearby Landfill a Danger?" referred to by IUSD Superintendent Walker in his comments at the Irvine City Council meeting of Feb 11, states the following (See Note 7 for the entire article):

"That was before the Navy's contractor, Shaw Environmental, went in to clean up the site and cap the landfill."

As interpreted by most people, this is a false statement. Shaw Environmental did not clean up Waste Area A, the now-capped landfill! See the report referenced in [Note 1](#) for a description of exactly what Shaw Environmental did accomplish. The report is signed as approved by Christopher Johnson! The PEA report, itself, also confirms that Waste Area A was not excavated and cleaned up.

The article states, further:

‘According to the city’s Dec 5 memo, Johnson [Christopher E. Johnson, an employee of Shaw Environmental, Inc., [Shaw] and the Field Project Manager of the Restoration work on IRP Site 3] stated that even if the underground membrane covering the landfill was breached, **“the dry inert contents of the landfill** would present no health and safety concerns to the surrounding public.”’ [emphasis added]

...

“Any solvents, paints or any other liquid materials were incinerated and are no longer present in the landfill,” Johnson said, according to the memo. ...

It is unlikely anyone would interpret this sentence as meaning anything other than the landfill contains only dry inert contents. This statement has no basis in fact; it is an untruth. But, no matter, later on in the article is the following for which there is no evidence; this is a clearly stated falsehood:

“Any solvents, paints or any other liquid materials were incinerated and are no longer present in the landfill,” Johnson said, according to the memo.

The media have perpetrated these untruths to such an extent that anyone who contests this statement, with all the facts at his/her disposal, is treated as someone weird and out of touch.

BACKGROUND & DETAILED REFUTATION OF MISINFORMATION

REMEDATION EFFORT:

The extent of IRP Site 3 was originally estimated from aerial photographs. When ground work was performed, it was discovered that IRP Site 3 comprised a main, central landfill, labeled Area A, and several surrounding landfills, labeled Area B through F, and A1 through A3. (See Fig 1) One of the surrounding landfills was located next to an incinerator, and the ashes from the incineration were buried in this adjacent landfill. The waste deposited in Area A was not from the incinerator, and the solvents and other toxic wastes were not incinerated. They were directly deposited into Area A. One goal of the remediation effort was to reduce the size of the landfill by excavating the surrounding landfills and consolidating them on top of Waste Area A, the main landfill.

The public has been confused in public presentations by IUSD staff in a study session by usage of the terms “restoration” or “remediation” of a hazardous waste site. The CA EPA uses the

term remediation to mean removal of contaminants, while the DON uses the term to mean EITHER removal of the contaminants or capping of the zone of contamination. The decision to cap Waste Area A rather than excavate and remove it to a hazardous waste dump is explained in the following report:

DON Final Record of Decision (ROD) – Operable Unit-2C Installation Restoration Program, Landfill Sites 3 and 5, Former MCAS El Toro, dated February, 2008, Page 4: The selected remedy is protective of human health and the environment, complies with substantive federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. The selected landfill remedy uses permanent solutions and alternative remediation technologies to the maximum extent practicable. **However, because treatment of the principal threats at the landfill sites was not found to be practicable, this remedy does not satisfy the statutory preference for treatment as a principal element of the remedy. The heterogeneity and volume of buried wastes and the absence of on-site hot spots that would represent the major sources of contamination preclude a remedy by which contaminants could be excavated and treated effectively.** However, wastes from Site 3, Unit 4 and from Unit 1 Waste Areas B through F will be consolidated on-site into the reduced Unit I Waste Area A footprint prior to capping...

...

Because this remedy will result in landfill wastes remaining on-site, reviews will be conducted at least every 5 years (more frequently if deemed necessary) after commencement of remedial action to assure that the remedy continues to provide adequate protection of human health and the environment. Results of the periodic review will be documented in a summary report. [emphasis added]

CHRISTOPHER E. JOHNSON:

Shaw Project Manager (he is not listed as a Licensed Professional Engineer) for Shaw, signed the “Approved by:” citation for Shaw’s Final Remedial Action Completion Report for IRP Sites 3 and 5 [Note 1]. This report describes in detail the work that Shaw did on IRP Site 3 (and 5). In the RAC Appendices, pages 1 through 54 are Change Requests, all signed by Christopher Johnson that clearly reflects the detail of the activities of which he was aware. However, the report was prepared by Mike P. Ayala, P.E., Shaw Lead Project Engineer/Landfill Engineer of Record, and signed and stamped with his Registered Professional Engineer stamp on the same date.

A Letter [Note 8] dated May, 21, 2010, from Christopher E. Johnson to Navy BRAC PMO West shows that he was aware of the actual work being performed and contradicts his public statement quoted in the IWN article of Feb 6:

Page 1:

“The study objective is to collect sufficient RAD [radiological] survey and soil sampling data to support that the survey units and surrounding area (**excluding the main landfill area**) [see also Note 11b] at IRP Site 3 are suitable for unrestricted use, including unrestricted radiological release. [emphasis added] (See Fig1.)

Page 2:

“To date, on the current project work, gamma isotopic analysis has confirmed Ra-226 as the only ROC [Radionuclide of Concern]. The contaminant sources were Ra-226 commodities including electrical switches, metal fragments/disks/slag/plates, glass bulb, small plastic cylinders, and various other waste forms and debris.

Page 3:

“From August 2009 to present [2011], Shaw has conducted the remedial action (RA) in accordance with the *Final ROD* and approved *Remedial Design (RD)/RA Work Plan* (Shaw, 2009). Excavated cover soil, incinerator waste/debris, and debris have been radiologically screened in 6-inch lifts in accordance with the specifications presented in the approved RD/RA Work Plan. Excavated cover and overburden soil has been sampled and analyzed, including analyzing for Ra-226,

Page 3:

“Area A1, Area A3, Waste Area C, and Waste Area E all contained incinerator waste/debris. During excavation and RAD screening activities, **a total of 233 RAD items or anomalies were discovered**, removed, and the surface area was screened in these four areas before any additional excavation activities were conducted. [emphasis added]”

From the RAC cited above, “The remedial action for IRP Sites 3 and 5 consisted of implementation of the selected remedy documented in the Final ROD (Navy, 2008)” Shaw was the contractor to implement the remedial action specified in that ROD. The RAC’s description of IRP Site 3 is copied from previous reports, and appears on page 1-2, as:

“The mission at former MCAS El Toro involved the operation and maintenance (O&M) of military aircraft and ground-support equipment. These activities generated oils, solvents, paint residues, hydraulic fluid, used batteries, and other waste (MCAS El Toro, 1991). Wastes were placed in unlined landfills and burned or covered with soil. Former MCAS El Toro provided material and support for Marine Corps aviation activities until the base closure on July 2, 1999.”

The work that Mr. Johnson oversaw was first the removal of soil on top of Area A, until the waste contents were reached and exposed. He then oversaw the excavation and consolidation of the surrounding landfills onto Waste Area A and then its final capping. He was fulfilling the mandated procedures decided and reported in the DON’s ROD of 2008, cited above. Any opinion he might have about the contents of Area A would be mere speculation. From his observation of the work performed he could only be aware of the contents of the surrounding landfills (B to F and A1 to A3) as he oversaw their excavation layer by 6” layer.

Ironically, the document attached to the Memo of December 5th that the City of Irvine distributed, and from which Mr. Johnson’s extensive quotes were re-quoted in the IWN article of Feb 6th is the RAC Report he approved by signing on August 23, 2012, and which states the following on page 7-6, completely refutes his quoted comments:

“Waste Area A (main landfill area) [IRP Site 3] requires ICs [Institutional Controls] because **chemical contaminants remain on site above levels that would allow for unlim-**

ited land use or unrestricted exposure and ongoing monitoring and maintenance is required.” [emphasis added]

In fact, Mr. Johnson’s quoted statement is so egregiously untrue, has become so widely disseminated, and could have such a great negative impact on public safety that it appears to be intentional misrepresentation creating a liability problem for Mr. Johnson and Shaw. In fact, his other statements quoted are misleading and irrelevant, even if some of them are literally true. His motivation for making these untrue and misleading statements is unknown, but suspect.

There are further references to toxic wastes in IRP Site 3: According to the DTSC’s online database of the Navy’s Superfund documents, envirostor.com, that anyone can access, IRP Site 3 is described as follows: past use(s) that caused contamination: aircraft maintenance, airfield operations, equipment/instrument repair, fire training areas. potential contaminants of concern: arsenic, dioxin, **other**: perchlorate; **petroleum**: polychlorinated biphenyls (PCBS), trichloroethylene (TCE) and other uncategorized.

Mr. Johnson’s quote, reported and bolded in the above section entitled: “IRVINE WORLD NEWS ARTICLE, FEB 6, 2014,” has been disseminated widely, first by a Memo of City of Irvine staff to the City Council, then by the IWN. Because of his position as Project Manager of the remediation effort, his statement has great credibility. Decisions by the IUSD Board and staff, and opinions of the general public have been strongly influenced by this quote that is clearly unsupportable.

IUSD staff, in a study session, presented to the public, to Superintendent Terry Walker and to the School Board, distressingly similar and highly inaccurate descriptions that they shouldn’t be concerned with IRP Site 3 because it has been “taken care of.” The risks and dangers of IRP Site 3 to the future use of Site A, as well as the contamination already found on Site A, have been consistently dismissed.

To illustrate the degree of misinformation accepted by Superintendent Walker, in his Feb 3, 2014, reply to Councilmember Larry Agran’s letter of Jan 8, 2014, he responds, as follows, on page 6:

“IUSD Response: Testing for radioactive material was done in Area A as documented in the following reports [titles shortened and abbreviated]:

- Shaw Environmental, 2013. FSS, OU 2C, IRP Site 3, Former MCAS El Toro, CA
- Weston 2006. Final Radiological Release Report, IRP Site 3;
- Earth Tech, 2005. Final Technical Memorandum,
- Earth Tech 2006, Final FS Addendum, OU 2C, IRP Sites 3 and 5, Former MCAS.

It turns out, if one reads those reports listed above, the only radiological testing of Area A (Waste Area A, the capped landfill) was of the top 18” of the surface, the limit of detection of the instrument used, before it was capped. There was no testing of any kind performed “in” Area A. This is among the more prevalent and dangerous pieces of misinformation disseminated, that, somehow, the interior of Waste Area A was tested for anything (other than the four

wells bored within the boundary of Waste Area A to release landfill gases, if any, and the sampling reported in [Note 6a](#), which found VOCs, etc.).

Superintendent Walker also claimed that the public must not be interested in the school siting issue because there have been very few comments at board meetings and in letters. Of course, keeping the public in the dark about the available information, and disseminating misinformation that all is well might have played a role.

QUESTION #16: Isn't it incumbent on the DTSC as part of its "public hearing" process and to protect the public from decision-making based on unsupportable, misleading and false information, to counter Mr. Johnson's statement, considering his "official" position in this process, as a signer of a document approved by the DTSC, as well as the extensive media misinformation, with an "official" statement in the form of a letter to the IUSD School Board refuting the misinformation?

RADIOACTIVE ITEMS:

Before any landfill consolidation was performed, a radioactive material survey was performed that is fully documented in the Final Status Survey Report for IRP Site 3, April 2013 [[Note 8](#)]. The report explains that the entire site, including all surrounding landfills, were first scanned for radioactivity to a depth of 18", the limit of the device's sensitivity. To assure that any radioactive items were removed from the surrounding landfills before they were excavated and exposed to the workers, those and only those surrounding landfills were scanned each time a 6" layer of soil was excavated. Mr. Johnson observed the contents of all the surrounding landfills as each 6" layer was exposed. He did not observe the contents of the interior of Waste Area A, since it has remained undisturbed, continuously, since it was closed in 1955.

Soil that was excavated had several purposes. Clean soil was stockpiled to use as a cover for Waste Area A, and other soil was conserved to backfill the surrounding landfills after they were completely excavated. During the process of excavating and scanning for radioactivity of the surrounding landfills, as well as the one-time scan of Area A, 226 radioactive items were found and removed—not just the one screw head that Mr. Johnson reported that made it seem laughable (See [Note 7](#), within second red-outlined rectangle, although it is not clear here if that is a quote from Mr. Johnson or the reporter's comment).] Since Waste Area A was not excavated below the cover layer, and soil samples were never taken from its interior, radioactive items from the interior of Waste Area A were never removed. There is no reason to believe that the density of radioactive items remaining in Waste Area A is any different from that in the surrounding landfills.

These radioactive items resulted from the use of radium paint [Ra-226, which has a half-life of 1,600 years] for aircraft instruments so they would glow in the dark, before more sophisticated methods were employed for night illumination. (This usage began in 1943!). One could guess that this paint was also used for "fun" things because of the glow-in-the-dark novelty and the military personnel's lack of concern for its low-level radioactivity. Personnel from the MCAS El Toro were interviewed in 1999 regarding the existence and disposal of radioactive items, and these interviews are reported in [Note 9](#).

From the DON Final Record of Decision – OU-2C Landfill Sites 3 and 5, February, 2008, on Page 2-3: “Although the risk due to potential exposure to radiation from Ra-226 at the surface of the landfills has been determined to be acceptable, **the high-density radiological surveys and sampling performed at the landfills were not intended to characterize landfill contents deeper than 18 inches below ground surface**, the limitation of the survey equipment. Therefore, the **DON identified radioactive waste applicable or relevant and appropriate requirements for this remedial action because of the potential for small quantities of waste with Ra-226 to be present in the body of the landfills**. The remedial action is protective of human health and the environment with regard to potential exposure to external radiation due to radioactive decay of Ra-226, which may be present at small quantities within the waste.” [emphasis added]

VOCs and METHANE:

There was concern that landfill gases (LFG), mainly methane, would escape, carrying along the other VOCs. To vent these gases, four wells were dug through the interior of Waste Area A to release these gases, along with piping that lead to a location where a treatment plant could be installed if found necessary. Since it had been so long since the landfill had been closed, very little methane was being generated since virtually all the decomposable materials within the interior of Area A had already decomposed. Nonetheless, an unknown quantity of VOCs remains in the landfill regardless of whether methane is being generated.

CHANGE IN DESCRIPTION OF IRP SITE 3

A description that reflects the DON’s beliefs appears in the Draft EIR prepared by the City of Irvine for The Great Park, February 2003:

p. 5.5-6 Landfill Sites 2, 3, 5 and 17. Description of IRP Site 3 is:

“...IRP Site 3 (Original landfill) covers approximately 20 acres and operated between 1943 and 1955. It is believed to contain municipal solid waste, scrap metal, incinerator ash, construction debris, paint residues, unspecified oily wastes, industrial solvents, hydraulic fluid and engine coolants....”

However, the description changes dramatically in the Draft Second Supplemental EIR prepared for the Heritage Fields Project, 2012, with the last sentence mysteriously deleted for no discernible reason, although nothing was removed from the contents of Waste Area A of IRP Site 3 in the intervening years, including the work of remediation at the site. That revised description is suddenly benign, as:

5.5 HAZARDS AND HAZARDOUS MATERIALS

p.5.5-9

“IRP Site 3 (Original Landfill) covers approximately 20 acres and operated between 1943 and 1955. It was the original former MCAS El Toro landfill, which was operated as a cut-and-fill disposal facility.”

LAND USE RELEASES

Draft Final Status Survey (FSS) Report, IRP Site 3, September, 2012, page 17:

The Navy recommends that all property within the IRP Site 3 boundary, **with the exception of Waste Area A (main landfill area)**, be released for unrestricted use, including unrestricted radiological release.” [emphasis added]

Repeated on page 17, with more detail:

IRP Site 3 Unit 4 and IRP Site 3 Unit 1 (Areas A1 through A3 and Waste Areas B through F) will be recommended for unrestricted reuse after wastes from these areas are consolidated into IRP Site 3 Unit 1 Waste Area A (main landfill area).

INSPECTIONS:

An earthquake could have unknown effects on the landfill contents. It could rupture the cap, or more insidious is that it could disturb the contents so that new migration pathways are created, releasing the toxins through new pathways through the soil and/or the air. As a result, in addition to the ICs imposed on Area A, and periodic inspections that are required, it was determined [Note 10] that after a flood (heavy rainfall) or earthquake of magnitude greater than 4.0 within 100 miles, the integrity of the cap must be inspected within 24 hours, if feasible. And if not feasible, it must be inspected within 7 days. That means that in the event of a breach, toxins could be escaping for a week before anyone comes to inspect.

QUESTION #16a: On what basis was the requirement devised that only an earthquake of magnitude greater than 4.0 within 100 miles would trigger an inspection? Might not an 8.0 magnitude earthquake 110 miles from IRP Site 3 have greater effect?

QUESTION #16b: Might not pile driving on Site A cause contents upset of the capped landfill?

HAVE REQUIRED INSPECTIONS BEEN PERFORMED?

In the DON report, “Final O&M and LTM Report (Aug 2011 – Dec 2012) IRP Sites 3 and 5, Nov 2013” [Note 11a], filed for the period from Aug 2011 to Dec 2012, claimed that there were no earthquakes of magnitude greater than 4.0 within 100 miles of IRP Site 3, so there were no inspections required after an earthquake event during that period. However, according to Cal-Tech’s Southern California Earthquake Center’s website, there were 9 earthquakes of magnitude greater than 4.0 within 100 miles during that period. And that was just during the second year of such monitoring and inspections. What are the chances those inspections would be performed in ten years or twenty years? And what’s to assure that they would be performed timely? And who would be notified? And what would be done about it if there were a breach of the cap, or if a migration path developed through the soil?

Further, on January 15, 2014, there was a magnitude 4.4 earthquake near Fontana, about 40 miles from IRP Site 3. The author inquired by email of the DTSC on Jan 24, 2014, and of the DON on Jan 30, 2014 to obtain a copy of the inspection report required after that earthquake, with some proof of when the inspection was actually made.

On Feb 19, 2014, the author received from Rana Georges, by email, copies of two inspection and Maintenance Checklists for IRP Site 3. The first report, dated Jan 17 reports that the inspector could not gain access because of a padlocked gate. The second report, dated Jan 23 (one day before my request for the report and **eight days** after the earthquake) indicates that there appears to be no disturbance of the site, and that rodent controls are in place. The eight-day lapse, assuming the inspection was actually performed on that date, for which there is no

proof offered, violates the DON controls that require inspection within seven days, if inspection within 24 hours is not feasible.

If this is the kind of adherence to controls to be expected in the future, the safety of school occupants is far from assured, all the more reason to reject Site A as adequate for a school. It is unreasonable to expect adherence to these controls for the next 30 years, let alone 60 or 90 years, when they are not being following even within the first few years after capping. The risk of exposure of the toxins almost seems inevitable.

QUESTION #17: Who is responsible for fulfilling the requirements of the ICs and ECs imposed by the DON on the capped landfill? What assurance would the occupants of a school built on Site A have that these inspections will actually be performed?

QUESTION #17a: Who gets informed and how if there is a detected failure of the cap, and or migration of toxins through the soil? What recourse do the government entities responsible for the health of its citizens, such as the school principal, IUSD and the City of Irvine have if and when these inspections are not performed?

QUESTION #18: Is it reasonable to depend on these required inspections to protect the health of the students, teachers and staff of the proposed high school, during the next thirty years, when they are not being performed reliably during the first 2 years?

QUESTION #19: Why doesn't the DTSC use their authority to assure the health of the future occupants of the proposed high school by imposing more stringent requirements and assuring that the requirements are met?

RISK AND MITIGATIONS

The ongoing requirement for inspections after earthquakes and floods makes clear that the DON recognizes the risk of the escape of toxic wastes.

Seismologists have predicted that a massive scale (magnitude 8.0 or higher) earthquake will shake the region sometime within the next 30 years or so. The result on IRP Site 3 is obviously unknown with myriad possible pathways to release the toxic wastes contained within.

In a recent phone conversation by the author with a staff member of the Department of Toxic Substances Control in the Cypress Hills Office, the DTSC employee suggested that the school could install gas detection monitors on the sides of the school buildings facing IRP Site 3.

QUESTION #20: In the event that the proposed school actually gets built on Site A, as a minimum, can the DTSC require that the IUSD protect the school's occupants by installing these devices that would have to be periodically tested, along with periodic evacuation drills, and if not, why not?

QUESTION #21: In the event of such a release of toxins, what is the remedy? Does the school have to close for an extended period of time?

QUESTION #22: Does the DTSC not believe it's their responsibility to counter misinformation being disseminated to the public, to City staff, and particularly, to a school board that has to make decisions based on misinformation and untruths?

CONCLUSION

A primary motivation of the IUSD to move forward with this project with all due speed, appears to be their claimed need to avoid school overcrowding. The DTSC has been sympathetic to this need. However, the long-term health and safety of IUSD's students, faculty and staff far outweigh any inconvenience caused by a delay in school construction that, for most activities, has been easily accommodated in the past with portable classrooms, a rather common practice for the IUSD and one in which they are expert.

It is essential that the IUSD Board of Trustees obtain accurate, unbiased information regarding all aspects of School Site A, that speaks to the health and safety of the future students, faculty and staff of the proposed new high school #5, rather than fitting the facts to meet a perceived need, and somehow, getting a lot of people "jumping on the bandwagon."

RECOMMENDATIONS:

The PEA should address the issue of future risk to proposed school Site A from what could be a large reservoir of contaminants in the capped landfill. It appears to only be concerned with toxins currently found on Site A, their current levels, and not their source or future possible increases in concentration. As a consequence:

1. The DTSC should take action to perform further testing near the well in which the four solvents (toxins) in well SG-2 were detected, and attempt to trace the origin of those solvents, wherever it takes them. That testing would certainly be off Site A to gain a fuller picture of the toxins' pathways and risk to Site A from contaminants originating in the capped landfill of IRP Site 3.
2. Further, prudence by the DTSC should dictate that by the presence of the toxins already found on Site A and reported in the PEA under current consideration, should require their removal.
3. The further testing specified in the PEA Appendix D, Section 5, should be performed, and a new recommendation be formulated based on those results before the PEA is submitted to the DTSC along with the start of a new 30-day Comment period, and a new public hearing at the beginning of the 30-day Comment period rather than at the middle of that period.

4. The DTSC should require soil and gas testing of the capped landfill within IRP Site 3 to determine the nature, quantity and extent of contaminants therein. The radioactive items therein are unlikely to migrate, so they can be left in place, although the contents of any well boring should be tested for radioactive items.
5. If substantial contaminants remain in the capped landfill, the almost certain origin of the toxins found in tests on Site A, Site A should be rejected as too risky for location of a school. Regardless of State law's prescribed "safe" limits, recent medical evidence is clear that a neurotoxicant, such as toluene, has no safe level for children.
6. After they are informed with accurate information, authentic public input is required, especially from those parents whose children are likely to attend the new High School #5 at Site A. If the school is built on Site A without addressing the issues of contamination in an open, transparent, and non-coercive atmosphere, there is a possibility that parents will boycott the school and demand that their children not attend it.

NOTES

Note 1

DON Final Remedial Action Completion Report (RACR), Operating Unit 2C, Installation Restoration Program (IRP) Sites 3 and 5, August 2012, Shaw Environmental, Inc.

Note 2

DON Final Operation and Maintenance (O&M) and Long-Term Monitoring (LTM) Report (August 2011 – December 2012) Operable Unit (OU) 2C, Installation Restoration Program (IRP) Sites 3 and 5 November 2013; Prepared by CE2-Kleinfelder Joint Venture, Pleasanton, CA 94588

Note 3

Final Operation and Maintenance and Long-Term Monitoring Report (August 2011 – December 2012) Operable Unit 2C, Installation Restoration Program Sites 3 and 5 November 2013; Prepared by CE2-Kleinfelder Joint Venture, Pleasanton, CA 94588
Page 2-2

2.1.3 Erosion

“...As noted on the Inspection and Maintenance Checklists (Appendix A-2), numerous animal burrows were noted at both IRP Sites 3 and 5. In accordance with Section 3.1 of the Final O&M/LTM Plan (Shaw, 2010), a maintenance program using bait is ongoing to reduce the burrowing animal population. Burrows are periodically filled and compacted to the specific grade with native soil from the surrounding buffer zone. New burrows will continue to be monitored and filled during inspections.

Note 4

[The Black Swan, The Impact of the Highly Improbable,” Nassim Nicholas Taleb, Random House, 2010]

Note 6

It was Assembly Bill No. 972 that amended the CA Education Code to grant to the DTSC the authority to protect the health of children attending a school with state funding, as:

CHAPTER 865

An act to amend Sections 17210.1 and 17213.1 of the Education Code, relating to school facilities, and declaring the urgency thereof, to take effect immediately.

[Approved by Governor October 13, 2001. Filed with Secretary of State October 14, 2001.]

It now reads, as follows:

CA EDUCATION CODE 17210 et al.

<http://www.leginfo.ca.gov/cgi-bin/displaycode?section=edc&group=17001-18000&file=17260-17268>

17210.1. (a) Notwithstanding any other provision of law:

(1) For sites addressed by this article for which school districts elect to receive state funds pursuant to Chapter 12.5 (commencing with Section 17070.10) of Part 10, the state act applies to schoolsites where naturally occurring hazardous materials are present, regardless of whether there has been a release or there is a threatened release of a hazardous material.

(2) For sites addressed by this article for which school districts elect to receive state funds pursuant to Chapter 12.5 (commencing with Section 17070.10) of Part 10, all references in the state act to hazardous substances

shall be deemed to include hazardous materials and all references in the state act to public health shall be deemed to include children's health.

(3) All risk assessments conducted by school districts that elect to receive state funds pursuant to Chapter 12.5 (commencing with Section 17070.10) of Part 10 at sites addressed by this article shall include a focus on the risks to children's health posed by a hazardous materials release or threatened release, or the presence of naturally occurring hazardous materials, on the schoolsite.

(4) The response actions selected under this article shall, at a minimum, be protective of children's health, with an ample margin of safety.

(b) In implementing this article, a school district shall provide a notice to residents in the immediate area prior to the commencement of work on a preliminary endangerment assessment utilizing a format developed by the Department of Toxic Substances Control.

(c) Nothing in this article shall be construed to limit the authority of the Department of Toxic Substances Control or the State Department of Education to take any action otherwise authorized under any other provision of law.

Note 6a: Draft Final O&M_LTM Plan OU 2C, IRP Sites 3 and 5 Former MCAS, El Toro, Nov 2010 Page 1-8 [Remember that Site 3, Unit 1 comprises Waste Area A and also Areas B-F.]

1.4.2.1 Impact to Soil at Site 3

At Site 3, Units 1, 3, and 4 were evaluated for potential soil contamination. Shallow (0 to 10 ft bgs) and subsurface (greater than 10 ft bgs) soil samples were collected within each unit. At Unit 1, shallow soil samples were collected during the Phase I RI [Remedial Investigation]. Six samples were collected at ground surface and two additional samples were collected at 5 and 10 ft bgs. VOCs, petroleum hydrocarbons, pesticides, herbicides, and metals were reported in one or more shallow soil samples. During the Phase I RI, 34 subsurface soil samples were collected from monitoring well borings. An additional sample was collected during the Phase II RI from each of three lysimeter borings. Subsurface soil samples had detectable concentrations of VOCs, petroleum hydrocarbons, semivolatile organic compounds (SVOCs), pesticides, herbicides, metals, and gross alpha and beta. On this basis, Unit 1 was recommended for further action.

1.4.2.2 Impact to Groundwater at Site 3

Four Site 3 monitoring wells and three Site 4 monitoring wells were sampled twice during the Phase I RI and once during the Phase II RI. Analytes reported in groundwater include VOCs, petroleum hydrocarbons, SVOCs, pesticides, herbicides, metals, and radionuclides. VOCs reported include benzene, chloroform, chloromethane, 2-hexanone, methylene chloride, tetrachloroethene (PCE), trichloroethene (TCE), and xylenes. Chloroform was the most frequently reported VOC, with a maximum reported concentration of 1 microgram per liter ($\mu\text{g/L}$). Benzene exhibited the highest concentration of the VOCs (20 $\mu\text{g/L}$). However, the RI Report concluded that based on the location where benzene was reported, this analyte originated from Tank Farm 5 and not from the landfill. Similarly, TCE and PCE were reported in the upgradient well for Site 3. Therefore, the RI Report concluded that the presence of these analytes was not attributable to the Site 3 landfill.

Note 7

4 IRVINE WORLD NEWS

IRVINE'S FIFTH HIGH SCHOOL

THURSDAY, FEB. 6, 2014

IS THE NEARBY LANDFILL A DANGER?

BY KIMBERLY MERCELL
AND JORDAN GRAHAM
STAFF WRITERS

The issue: A landfill located near Site A was once used to dump construction debris and other waste from the El Toro Marine base. The school district says it does not pose a threat to Irvine students. Irvine City Councilman Larry Agran said it contains dangerous chemicals.

The question: Would a landfill located near Site A pose a danger to students?

Irvine Unified School District: "Site A has proven, based upon review thus far, to be a very viable site for a safe, efficient, state-of-the-art high school. ... (The school district) is continuing with finalizing its review and potential acquisition of Site A."

Irvine City Councilman Larry Agran: "This is a toxic waste landfill that contains radioactive materials and dangerous, toxic, cancer-causing chemicals that have no place being in proximity to any school. The way they pose a danger is over years. Those toxins can be waterborne or airborne, migrating far from the site where they were originally dumped."

Agran said that he worries an earthquake or flood could dislodge some of the materials in the landfill and contaminate the surrounding land.

The facts: Esrlon, there wasn't a lot known about the landfill. It was used from 1943 to 1955 by the Marine Corps, and U.S. Navy representatives believed it could contain "municipal solid waste, scrap metal, incinerator ash, construction debris, paint residues, unspecified oily wastes, indus-



FILE PHOTO: ED CRISOSTOMO, STAFF PHOTOGRAPHER

The state is currently investigating Site A for final approval. If it meets school site standards, Irvine Unified will have permission to build.

trial solvents, hydraulic fluid, engine coolants, and various inert wastes," according to Navy reports.

That was before the Navy's contractor, Shaw Environmental, went in to clean up the site and cap the landfill. Chris Johnson, with Shaw Environmental, was quoted in a Dec. 5 memo to City Council members saying that workers were able to visually confirm the landfill contained incinerator ash and typical construction debris including concrete and asphalt.

"Any solvents, paints or any other liquid materials were incinerated and are no longer present in the landfill," Johnson said, according to the memo. Because of that, the landfill does not and will not "generate measurable levels of methane gas," he said.

The 4-acre landfill in

question is approximately 900 feet northwest of Site A, the 40 acres northeast of the Orange County Great Park that the school district favors as the location for its planned fifth high school.

The memo also said that the staff who cleaned the site was "not exposed to harmful substances or conditions" and workers were required to wear Level D equipment, the lowest level of protection consisting of hard hats, long-sleeved shirts, long pants and steel-toed boots, Johnson said.

A December 2006 Navy report said 1.1 million survey readings had been recorded and 31 soil samples taken. One particular area had a higher radiation reading than others, but a further investigation revealed a small metal screw to be the culprit.

"The small anomaly was

judged to be a random, low-level radioactive point source adrift at the site," according to the 2006 report.

In 2008, the landfill was capped with a membrane located 4 feet beneath the surface.

Now, the area is in the midst of long-term monitoring by the Navy.

The Navy's Final Remedial Action Completion Report from August 2012 stated that the landfill was protective of human health and the environment.

According to the city's Dec. 5 memo, Johnson stated that even if the underground membrane covering the landfill was breached, "the dry inert contents of the landfill would present no health and safety concerns to the surrounding public."

The Navy has scanned

and analyzed samples of what materials remain and last year the Environmental Protection Agency, the State Water Board, the California Department of Toxic Substances Control, and the California Department of Public Health determined the site "was acceptable for unrestricted use," according to the Dec. 5 memo from city staff.

Nothing can be constructed directly on top of the landfill or within 100 feet of its boundary, though.

The state requires additional analysis for proposed school sites. The Department of Toxic Substances Control is responsible for assessing such sites and is currently investigating Site A for final approval. If the agency determines the site meets California school site standards, Irvine Unified will have permission to

close on the property and begin construction.

The agency is expected to submit its final report in mid-March, according to school district officials.

Irvine Unified Superintendent Terry Walker wrote in a Feb. 3 memo that if the final report indicates that "the migration of toxins is likely to occur for any reason (including an earthquake or flood), (the Department of Toxic Substances Control) will surely make that known to IUSD."

The school board is responsible for making the final decision on where to place the high school.

Last year, no legal challenges were submitted to challenge the accuracy of the district's environmental impact report, which found Site A to be an acceptable site for its fifth high school.

The statements outlined in red rectangles are all false. Shaw Environmental did not clean up the capped landfill. It was NEVER excavated and soil samples were never taken from it. Solvents were dumped into the capped landfill. They were not incinerated. In fact, there is no way to determine if any solvents were incinerated as there is no record of that being done. See the reference for Note 1 for exactly what Shaw Environmental did go.

Note 8:

Final Status Survey Report, Operable Unit 2C, Installation Restoration Program Site 3, Former Marine Corps Air Station El Toro, California, April 2013, Approved by Christopher E. Johnson, Shaw Project Manager

Note 9

DON Final Historical Radiological Assessment, prepared by Roy F. Weston, Inc., May, 2000, This report includes the results of Personnel Interviews Conducted in 1994.

Note 10

Final Operation and Maintenance/Long-Term Monitoring Plan, OU 2C, IRP Sites 3 and 5, Former MCAS El Toro, November 2010, page 2-3

2.2 Non-Routine Maintenance

According to the Final O&M/LTM Plan, the landfill cover components and items listed in Sections 2.1.1 through 2.1.7 will be inspected visually following significant events such as earthquakes (defined as greater than Richter magnitude of 4.0 within 100 miles of the site), wildfires, and major storms (defined as rainfall exceeding 2 inches per 24 hours). If feasible, these non-routine inspections are to be conducted within 24 hours and not later than one week following the event.

Note 11a

Final O&M and LTM Report (August 2011-December 2012) IRP Sites 3 and 5, Nov 2013, prepared by CE2-Kleinfelder JV, page 2-3

2.2 Non-Routine Maintenance

...

No significant rainfall events occurred in the August 2011 through December 2012 period. The most significant rainfall experienced during this period was 1.60 inches of rain at nearby Santa Ana on April 13, 2012 (NOAA 2013). Wildfires did not occur at or near the two sites. **Earthquakes greater than 4.0 magnitude did not occur near the sites during this period.** Because no significant events occurred and no O&M was required at the sites, no non-routine maintenance was required or conducted. [emphasis added]

The above claim is incorrect; because, there were nine significant earthquakes during that time period within 100 miles. According to CalTech’s Southern California Earthquake Data Center (SCEDC) there were nine (9) such earthquakes, the largest of magnitude 4.46.

See: http://www.data.scec.org/cgi-bin/catalog/catalog_search.pl

Center of IRP Site 3:

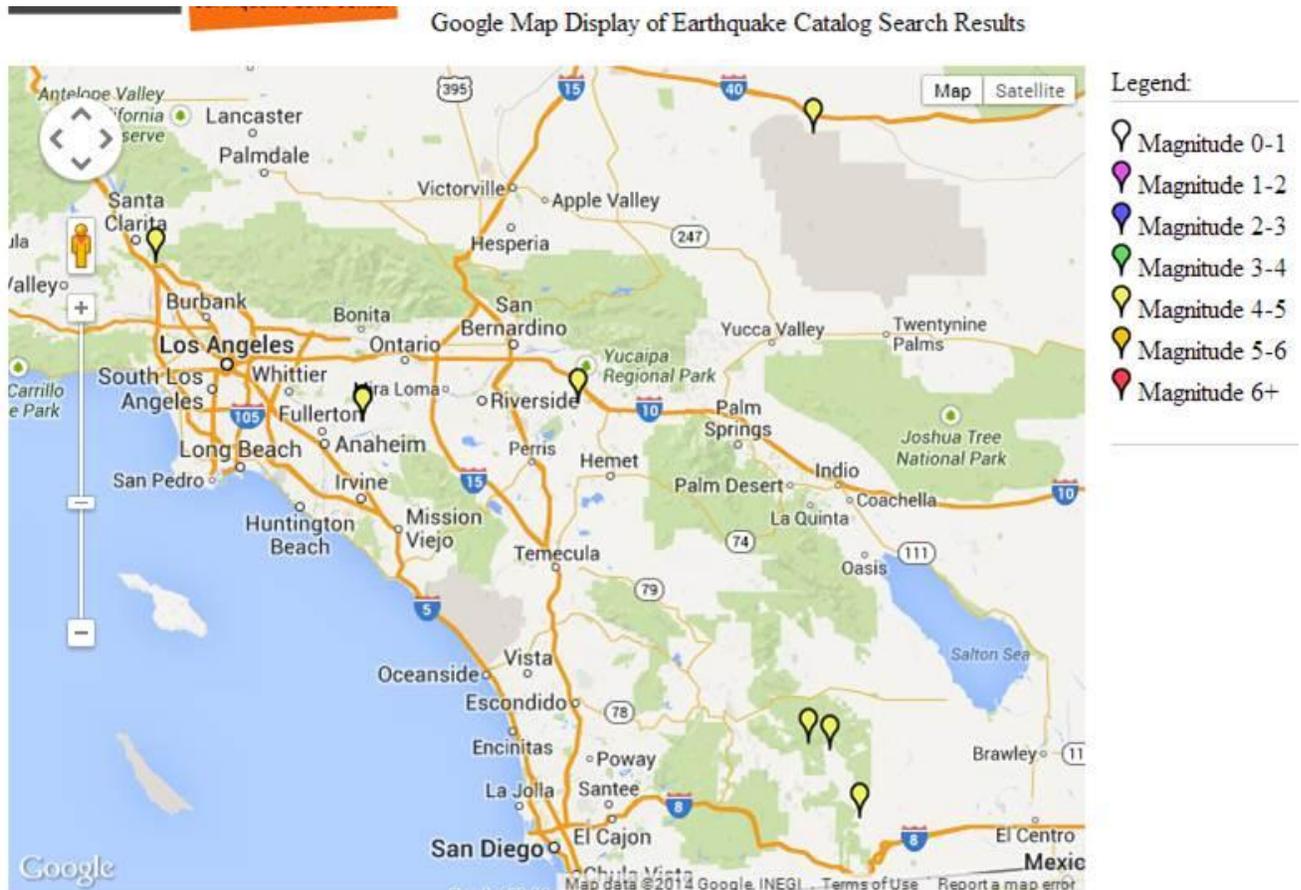
33.676911 LATITUDE or 33deg 40’ 36.879”; -117.716143 LONGITUDE or -117deg 42’ 58.1148”
100 miles = 160.9344 km

Below are the earthquake events >4.0 within 100 miles of IRP Site 3 between Aug 2011 and Dec 2012.

#YYY/MM/DD	HH:mm:SS.ss	ET	MAG	M	LAT	LON	DEPTH	Q	EVID	NPH	NGRM
2011/09/01	20:47:07.95	1e	4.24	1	34.339	-118.475	7.3	A	11001205	209	2213
2011/09/14	14:44:51.02	1e	4.14	1	33.953	-117.076	16.9	A	11006189	167	2211
2011/10/17	20:05:57.82	1e	4.01	1	34.694	-116.293	1.1	A	15064556	148	2250

2012/08/08	06:23:34.16	1e	4.46	1	33.905	-117.792	10.1	A	15189073	345	2435
2012/08/08	16:33:22.05	1e	4.45	1	33.904	-117.791	10.4	A	15189281	246	2445
2012/08/29	20:31:00.35	1e	4.13	1	33.906	-117.788	9.2	A	15207433	200	2519
2012/10/02	08:28:14.96	1e	4.13	w	32.805	-116.144	10.5	A	15223417	287	2444
2012/10/08	00:39:08.34	1e	4.16	1	33.012	-116.311	11.4	A	15226257	177	2456
2012/12/22	21:37:45.14	1e	4.02	1	32.997	-116.239	7.8	A	15267105	169	2404

Number of events: 9



Search Parameters: magnitude between 4.0 and 9.0
 date/time between 2011/08/01 00:00:00 and 2012/12/31 00:00:00
 Number of events on map: 9

Note 11b

Final Status Survey Report, OU 2C, IRP Site 3, April 2013 [Re: Radiological surveys, only]

1.0 Introduction

This Final Status Survey (FSS) Report was prepared by Shaw Environmental, Inc. (Shaw), a CB&I company, for the Base Realignment and Closure Program Management Office and the Naval Facilities Engineering Command Southwest under Contract No. N68711-01-D-6011, Contract Task Order 0013. This FSS Report has been prepared to document past radiological (RAD) scoping efforts, the RAD survey activities conducted during the remedial action activities, and the RAD survey and soil sampling activities conducted during the FSS activities to support that the survey units and surrounding area (**excluding the main landfill area**) are suitable for unrestricted use at Operable Unit 2C, Installation Restoration Program (IRP) Site 3 (Original Landfill), at former Ma-

rine Corps Air Station (MCAS) El Toro in Orange County, California. The Draft FSS Report was issued to the Federal Facility Agreement (FFA) signatory agencies including the U.S. Environmental Protection Agency (EPA), Region 9; California Department of Toxic Substances Control (DTSC); and California Regional Water Quality Control Board (RWQCB), Santa Ana Region, for review and concurrence in July 2012. The California Department of Public Health (DPH), in coordination with the California DTSC, was also provided with a copy of the Draft FSS Report for review and concurrence. Appendix A provides the comment letters from the FFA signatory agencies along with the responses to these comments. [emphasis added]

Note 12

INSTITUTIONAL CONTROLS: Land use restrictions on IRP Site 3.

Ibid Page 1-5; Also:

Remedial Action Completion Report (RACR), OU 2C, IRP Sites 3 and 5, August 2012

Page 4-58

A Land-Use Control Remedial Design (LUC RD) has been prepared that presents the description, implementation, maintenance, and enforcement procedures for ICs at the IRP Sites 3 and 5 landfill areas. This LUC RD is included as an appendix to the *Final Operation and Maintenance/Long-Term Monitoring Plan, Operable Unit 2C, IRP Sites 3 and 5* (Shaw, 2010b) for IRP Sites 3 and 5. The land-use restrictions listed in the LUC RD prohibit the following in the ARICs at IRP Site 3 (Figure 2):

- Residential use of the sites, including any permanent housing structure, mobile home, or factory-built housing, constructed or installed for use as a residential human habitation; a hospital for humans; a school for persons under 21 years of age; a day care facility for children; or any permanently occupied human habitation other than those used for commercial or industrial purposes, without the prior review and written approval of the FFA signatories.
- Construction of facilities, structures, or appurtenances; excavation; or any other land-disturbing activity into or on the surface of the landfills that may involve adverse impacts upon the performance of the cap or affect the drainage and erosion controls developed for the cap without the prior review and written approval of the FFA signatories.
- Construction of structures within the ARICs without the prior review and written approval of the FFA signatories and the California Integrated Waste Management Board (now known as CalRecycle).
- Planting deep-rooted plants that have the potential to interfere with the performance of the cap in preventing infiltration (surface irrigation is not prohibited) without the prior review and written approval of the FFA signatories.
- Land-disturbing activity within the 100-foot buffer zone adjacent to the landfill that may cause adverse effects upon the landfill through erosion of the surface or diversion of off-site surface water runoff onto the cap without the prior review and written approval of the FFA signatories.
- Removal of or damage to security features (such as locks on monitoring wells, site fencing, and signs) or to survey monuments, monitoring equipment, piping, or other appurtenances without the prior review and written approval of the FFA signatories.

In addition to the above prohibitions, the Navy; FFA signatories; and their authorized agents, employees, contractors, and subcontractors shall have the right to enter and inspect the property located in the ARIC at IRP Site 3, perform monitoring activities, ensure the viability of LUCs, and perform any additional response actions.

Note 13

IUSD Facilities Study Session, Nov 6, 2013, SLIDE #9 of 79

Safety: Issues of Environmental Concern

Concerns regarding the landfill near Site A. What confidence do we have with the mitigation measures currently in place?

- The mitigation and security features performed at the landfill include, but are not limited to, the cap and drainage features, settlement monuments and monitoring stations. All inspection and maintenance of security features will be performed as necessary to ensure the integrity of the landfill cap and prevent unauthorized access
- Periodic reviews are required to evaluate the monitoring results and verify that the encapsulation and mitigation measures performed remain protective of human health and environment

When a question about the toxic contaminants of IRP Site 3 was asked by a Board member, it was dismissed by a wave of the hand by the presenter who said that it had been taken care of by the remediation [highly paraphrased and reported from memory].

FIGURES



Figure 1

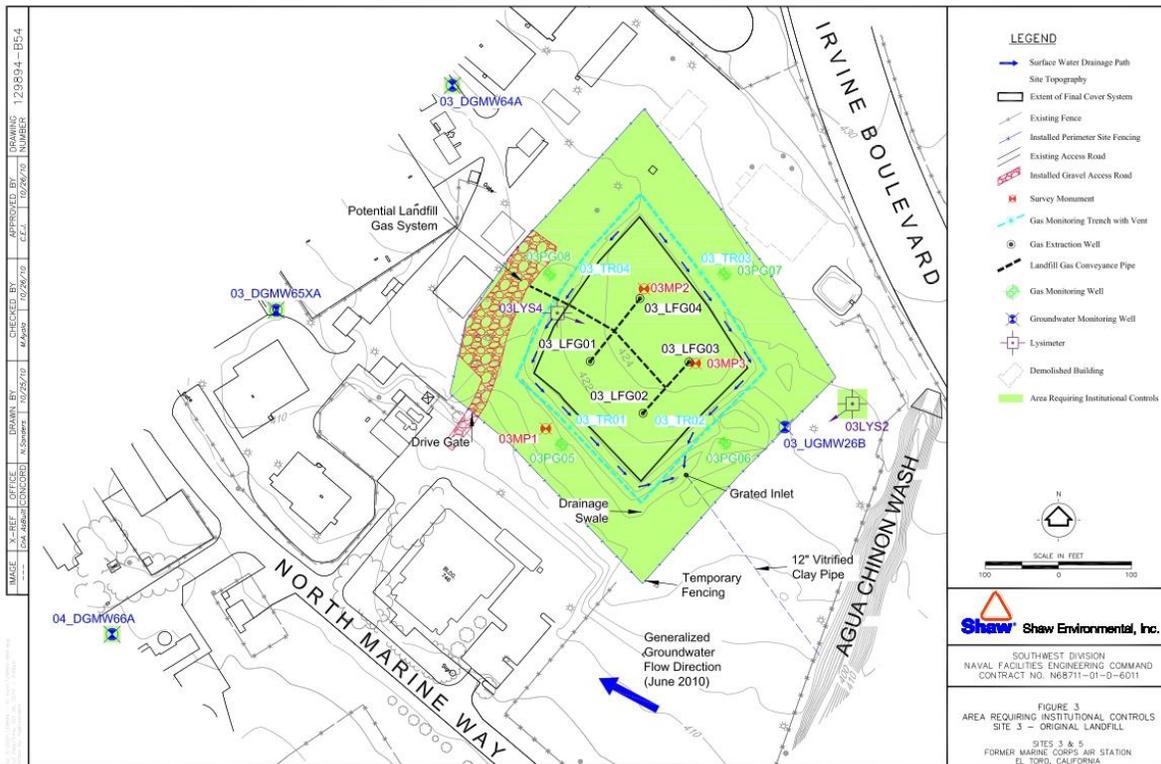


Figure 2

COMMENT on Preliminary Environmental Assessment Report for: Proposed IUSD High School #5—Site A

DCN: CEKA-2627-0004-0023
November 2013

LTM Report, IRP Sites 3 & 5
(August 2011 - December 2012)

Table 5a. Depth to Groundwater Measurements and Groundwater Elevation Data

Location	Screen Interval (ft BTOC) ¹	Measurement Point Elevation (ft MSL) ²	LTM Event #1 September 2010		LTM Event #2 January 2011		LTM Event #3 April 2011		LTM Event #4 June 2011		LTM Event #5 September 2011		LTM Event #6 March 2012		LTM Event #7 September 2012		
			DTW (ft BTOC)	GWE (ft MSL)	DTW (ft BTOC)	GWE (ft MSL)	DTW (ft BTOC)	GWE (ft MSL)	DTW (ft BTOC)	GWE (ft MSL)	DTW (ft BTOC)	GWE (ft MSL)	DTW (ft BTOC)	GWE (ft MSL)	DTW (ft BTOC)	GWE (ft MSL)	
IRP Site 3																	
03 UGMW26B	218.6-248.6	421.95	232.4	189.55	233.75	189.55	233.75	234.48	187.47	235.15	186.8	235.37	186.58	236.4	185.55	237.76	184.19
03 DGMW64A	213.1-253.1	424.32	240.72	183.6	241.87	182.45	242.65	181.67	243.25	181.07	243.56	180.76	244.45	179.87	245.79	178.53	
03 DGMW65XA	202.8-237.8	412.55	229.83	182.72	230.92	181.63	231.7	180.85	232.29	180.26	232.58	179.97	233.57	178.98	234.98	177.57	
04 DGMW66A	194.2-234.2	405.38	218.6	186.58	219.84	185.54	220.68	184.7	221.3	184.08	221.93	183.45	222.9	182.48	224.04	181.34	
IRP Site 5																	
05 UGMW27B	159.9-189.9	431.82	169.94	261.88	171.14	260.68	170.79	261.03	170.74	261.08	171.1	260.72	171.65	260.17	172.66	259.16	
05 DGMW41B	160.0-190.0	425.75	170.5	255.25	171.55	254.2	171.36	254.39	171.43	254.32	171.77	253.98	172.44	253.31	173.20	252.55	
05 DGMW67A	152.1-192.1	432.40	176.04	256.36	177.22	255.18	176.99	255.41	177.1	255.3	177.53	254.87	178.24	254.16	179.21	253.19	
05 DGMW68A	149.0-189.0	422.13	174.62	247.51	175.7	246.43	175.72	246.41	175.86	246.27	176.22	245.91	176.82	245.31	177.50	244.63	
05NEW1	162.9-202.9	410.16	170.71	239.45	171.79	238.37	172.56	237.6	173.05	237.11	173.58	236.58	173.89	236.27	174.37	235.79	

Table 5b. Comparison of Groundwater Elevation Data

Location	LTM Event #1 Sep 2010 Elevation (ft MSL)	LTM Event #2 Jan 2011 Elevation (ft MSL)	LTM Event #3 Mar 2011 Elevation (ft MSL)	LTM Event #4 Jun 2011 Elevation (ft MSL)	LTM Event #5 Sep 2011 Elevation (ft MSL)	LTM Event #6 Mar 2012 Elevation (ft MSL)	LTM Event #7 Sep 2012 Elevation (ft MSL)	Change in Elevation between LTM #1 and #7 (ft)	Change in Elevation between LTM #6 and #7 (ft)
IRP Site 3									
03 UGMW26B	189.55	188.20	187.47	186.80	186.58	185.55	184.19	-5.36	-1.36
03 DGMW64A	183.60	182.45	181.67	180.76	179.87	178.53	177.57	-5.07	-1.34
03 DGMW65XA	182.72	181.63	180.85	180.26	179.97	178.98	177.57	-5.15	-1.41
04 DGMW66A	186.58	185.54	184.70	184.08	183.45	182.48	181.34	-5.24	-1.14
Average IRP Site 3								-5.20	-1.31
IRP Site 5									
05 UGMW27B	261.88	260.68	261.03	261.08	260.72	260.17	259.16	-2.72	-1.01
05 DGMW41B	255.25	254.20	254.39	254.32	253.98	253.31	252.55	-2.70	-0.76
05 DGMW67A	256.36	255.18	255.41	255.30	254.87	254.16	253.19	-3.17	-0.97
05 DGMW68A	247.51	246.43	246.41	246.27	245.91	245.31	244.63	-2.88	-0.68
05NEW1	239.45	238.37	237.60	237.11	236.58	236.27	235.79	-3.66	-0.48
Average IRP Site 5								-3.03	-0.78

Notes:
 For Screen Interval and Measurement Point elevation please see Table 5a. For complete well construction data see Table 4.
¹ Data from Table 3, Final 1st Annual LTM Report (Shaw, 2013)
² Surveyed elevation at probe access in well cap

Acronyms & Abbreviations:
 ft = feet
 ft BTOC = feet below top of casing
 ft MSL = feet relative to mean sea level

Figure 3

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LTM Report, IRP Sites 3 & 5
(August 2011 - December 2012)

Tables

Table 6b. Prediction Limits and Maximum Contaminant Levels at IRP Site 3

Analyte	Fed / CA Maximum Contaminant Level	03_UGMW26B Prediction Limits	03_DGMW64A Prediction Limits	03_DGMW65XA Prediction Limits	04_DGMW66A Prediction Limits
1,1,2-Trichlorotrifluoroethane (F113)	1,200*	NE	NE	NE	NE
1,1-Dichloroethene (1,1-DCE)	7 / 6	NE	4.8	4.9	1.2
1,2-Dichloroethene (1,2-DCE, total)	70 / 6	NE	5.1	5.1	2.4
2-Butanone	None	NE	NE	NE	NE
Acetone	None	NE	NE	NE	NE
Benzene	5 / 1	NE	5	4.8	50
Bromodichloromethane (BDCM)	80 / 80	NE	NE	NE	NE
Carbon Disulfide	None	NE	NE	NE	NE
Carbon Tetrachloride (CCl ₄)	5 / 0.5	NE	4.9	5	1.3
Chloroethane	5	NE	NE	NE	NE
Chloroform (CHCl ₃)	80 / 80	NE	0.86	4	1.2
Chloromethane	None	NE	NE	NE	NE
Methyl tert-butyl ether (MTBE)	13*	NE	NE	NE	NE
Methylene chloride	5 / 5	NE	NE	NE	NE
Sec-butylbenzene	None	NE	NE	NE	NE
Sulfate	None	NE	NE	NE	NE
Sulfide	None	NE	NE	NE	NE
Tert-butylbenzene	None	NE	NE	NE	NE
Tetrachloroethylene (PCE)	5 / 5	NE	4.8	4.8	1.2
Toluene	1,000 / 150	NE	NE	NE	NE
Trichloroethylene (TCE)	5 / 5	NE	4.8	4.8	1.2
Xylenes (total)	10,000 / 1,750	NE	NE	NE	NE

Notes:
 *State MCL
 Prediction Limits shown are for currently sampled constituents and are included here if they meet one of the following criteria:
 1 - there has been a detection above the method detection limit during the LTM program;
 2 - there has not been a detection, but a Prediction Limit has been established; or
 3 - there has not been a detection, but an MCL has been established.
 Prediction Limits per Tables 18 and 19, Final 1st Annual Long-Term Monitoring Report (Shaw, 2013)
 Analytical methods: VOCs EPA 8260B, Mercury EPA7470A, Sulfate EPA300, Sulfide EPA376.1.
 All units are µg/L (micrograms per liter) except Sulfate and Sulfide units of mg/L (milligrams per liter)

Abbreviations:
 NE = Prediction Limit was not established due to insufficient data (see above reference to Tables 18 and 19 of Final 1st Annual LTM Report)

Figure 4

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LTM Report, IRP Sites 3 & 5
(August 2011 - December 2012)

Tables

Table 6c. Prediction Limits and Maximum Contaminant Levels at IRP Site 5

Analyte	Fed / CA Maximum Contaminant Level	05_UGMW27B Prediction Limits	05_DGMW41B Prediction Limits	05_DGMW67A Prediction Limits	05_DGMW68A Prediction Limits	05_NEW1 Prediction Limits
1,1,2-Trichlorotrifluoroethane (F113)	1,200	NE	NE	NE	NE	NE
1,1-Dichloroethene (1,1-DCE)	7 / 6	NE	4.8	4.8	1.2	NE
1,2-Dichloroethene (1,2-DCE, total)	70 / 6	NE	5	5	2.4	2.2
2-Butanone	None	NE	NE	NE	NE	NE
Acetone	None	NE	NE	NE	NE	NE
Benzene	5/1	NE	4.8	4.7	1.3	1.1
Bromodichloromethane (BDCM)	80 / 80	NE	NE	NE	NE	NE
Carbon Disulfide	None	NE	NE	NE	NE	NE
Carbon Tetrachloride (CCl ₄)	5 / 0.5	NE	5	4.9	1.3	0.98
Chloroethane	5	NE	NE	NE	NE	NE
Chloroform (CHCl ₃)	80 / 80	1.9	6.5	4.7	3.5	0.98
Chloromethane	None	NE	NE	NE	NE	NE
Methyl tert-butyl ether (MTBE)	13 ¹¹	NE	NE	NE	NE	NE
Methylene chloride	5 / 5	NE	NE	NE	NE	NE
Sec-butylbenzene	None	NE	NE	NE	NE	NE
Sulfate	None	NE	NE	NE	NE	NE
Sulfide	None	NE	NE	NE	NE	NE
Tert-butylbenzene	None	NE	NE	NE	NE	NE
Tetrachloroethylene (PCE)	5 / 5	NE	4.6	0.89	1.2	1.1
Toluene	1,000 / 150	NE	NE	NE	NE	NE
Trichloroethylene (TCE)	5 / 5	NE	4.3	10.6	1.2	1.1
Xylenes (total)	10,000 / 1,750	NE	NE	NE	NE	NE

Notes:

*State MCL

Prediction Limits shown are for currently sampled constituents and are included here if they meet one of the following criteria:

- 1 – there has been a detection above the method detection limit during the LTM program;
- 2 – there has not been a detection, but a Prediction Limit has been established; or
- 3 – there has not been a detection, but an MCL has been established.

Prediction Limits per Tables 18 and 19, Final 1st Annual Long-Term Monitoring Report (Shaw, 2013)

Analytical methods: VOCs EPA 8260B, Mercury EPA7470A, Sulfate EPA300, Sulfide EPA376.1.

All units are µg/L (micrograms per liter) except Sulfate and Sulfide units of mg/L (milligrams per liter)

Abbreviations:

NE = Prediction Limit was not established due to insufficient data (see above reference to Tables 18 and 19 of Final 1st Annual LTM Report)

Figure 5

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LTM Report, IRP Sites 3 & 5
(August 2011 - December 2012)

Table 7. Groundwater Sampling Results for Monitoring Wells at IRP Site 3

Location	03_DGMW64			03_DGMW65XA			04_DGMW66A			03_UGMW26B		
	Point of Compliance			Point of Compliance			Point of Compliance			Upgradient Background		
LTM Event #	5	6 / 6-Dup	7 / 7-Dup	5 / 5-Dup	6	7	5	6	7*	5	6	7*
Sample ID	CC0208	CC0214 / 0215	CC0220 / 0221	CC0204 / 0205	CC0213	CC0218	CC0203	CC0212		CC0206	CC0209	
Sample Date	10/04/11	03/30/12	9/20/12	10/03/11	03/30/12	9/20/12	10/03/11	03/30/12		10/03/11	04/02/12	
Volatile Organic Compounds (µg/L) - only VOCs detected at any Site 3 location during the reporting period are listed												
Benzene	< 1.0	< 1.0 / < 1.0	< 1.0 / < 1.0	< 1.0 / < 1.0	< 1.0	< 1.0	0.43 J	0.43 J	NS	< 1.0	< 1.0	NS
Chloroform	0.49 J	0.55 J / 0.56J	0.55 J / 0.56J	< 1.0 / < 1.0	0.21 J	0.25 J	< 1.0	< 1.0	NS	< 1.0	< 1.0	NS
Methylene Chloride	< 1.0	< 1.0 / < 1.0	< 1.0 / < 1.0	< 1.0 / < 1.0	< 1.0	< 1.0	0.63 J	0.53 J	NS	< 1.0	< 1.0	NS
sec-Butylbenzene	< 1.0	< 1.0 / < 1.0	< 1.0 / < 1.0	< 1.0 / < 1.0	< 1.0	< 1.0	0.29 J	< 1.0	NS	< 1.0	< 1.0	NS
tert-Butylbenzene	< 1.0	< 1.0 / < 1.0	< 1.0 / < 1.0	< 1.0 / < 1.0	< 1.0	< 1.0	0.22 J	< 1.0	NS	< 1.0	< 1.0	NS
General Chemistry (mg/L) - all results are listed												
Sulfate	151	154 / 154	159 / 157	76.9 / 77.3	75.8	79.1	69.3	65.5	NS	64.7	82.4	NS
Sulfide	< 1.0	< 1.0 / < 1.0	< 1.0 / < 1.0	< 1.0 / < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	NS	< 1.0	< 1.0	NS

Notes:

* These locations were not sampled in September 2012 due to groundwater elevation being below the intake of the dedicated pump.

Values above Maximum Contaminant Levels (MCLs) would be **bolded**; and values above Prediction Limits (PLs) would be **bolded and blue**. However, no results at IRP Site 3 during this period are above MCLs or PLs.

See Table 6 for comparative standards, maximum contaminant levels and prediction limits.

Values in *italics* indicate duplicate groundwater sampling results.

< indicates analytical result is less than specified method reporting limit.

Acronyms & Abbreviations:

- J = indicates an estimated value
- LTM = long term monitoring
- mg/L = milligrams per liter
- NS = not sampled
- µg/L = micrograms per liter

Figure 6

Table 9. Soil Moisture Sampling Results at IRP Sites 3 and 5

Location	03LYS2			03LYS4		
Location Type	Background			Point of Compliance		
LTM Event #	3	4	5	3	4	5
Sample ID	CC0201	CC0216	CC0223	CC0202	CC0217	CC0222
Sample Date	10/03/11	03/30/12	9/25/12	10/03/11	03/30/12	9/21/12
Volatile Organic Compounds (ug/L) - only VOCs detected at any Site 3 location during the reporting period are listed						
2-Butanone	< 10	7.2 J	< 10	< 10	< 10	< 10
Acetone	7.3 J	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	< 1	< 1	< 1	0.51 J	0.51 J	0.49 J
Carbon disulfide	< 1	< 1	< 1	0.27 J	0.39 J	0.25 J
Chloroform	0.82 J	4.8 J	5.3	11	13	12
Chloromethane	< 1	0.46 J	< 1	< 1	< 1	< 1
m/p-Xylenes	0.43 J	< 1	< 1	< 1	< 1	< 1
o-Xylene	0.28 J	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	0.67 J	< 1	< 1	< 1	< 1	< 1
Trichloroethylene	0.3 J	1.8 J	1.8	5.7	6.3	5.8

Location	05LYS2			05LYS3		
Location Type	Point of Compliance			Background		
LTM Event #	3	4	5 / 5-Dup	3	4	5
Sample ID	DD0202	DD0220	DD0232 / 0233	DD0203	DD0221	DD0235
Sample Date	10/03/11	03/30/12	9/21/12	10/03/11	03/30/12	9/25/12
Volatile Organic Compounds (ug/L) - only VOCs detected at any Site 5 location during the reporting period are listed						
2-Butanone	< 10	< 10	< 10 / < 10	< 10	7.5 J	< 10
Acetone	< 10	< 10	< 10 / < 10	< 10	6.7 J	< 10
Chloromethane	< 1	0.34 J	< 1 / < 1	< 1	< 1	< 1
Methyl tert-butyl ether	0.42 J	< 1	< 1 / < 1	< 1	< 1	< 1
Trichloroethylene	0.24 J	0.36 J	0.22 J / < 1	< 1	< 1	< 1

Notes:

See Table 6 for comparative standards, maximum contaminant levels and prediction limits.
Values in *italics* indicate duplicate groundwater sampling results.
"<" indicates analytical result is less than specified method reporting limit.

Acronyms & Abbreviations:

J = indicates an estimated value
LTM = long term monitoring
µg/L = micrograms per liter

Figure 7

**Table 10. Landfill Gas Measurements at IRP Site 3
October 2011**

IRP Site 3 LFG Location	Probe Depth (ft BGS)	Sample Date	Total VOCs ppm _v	Fixed Gases			
				Methane	Oxygen	Carbon Dioxide	Balance*
				Percent			
03PG05	5-6	10/3/2011	0.0	0.0	20.2	1.2	78.6
	19-20	10/3/2011	0.1	0.0	17.6	2.7	79.7
03PG06	5-6	10/3/2011	0.0	0.0	18.4	1.6	80.0
	19-20	10/3/2011	0.1	0.0	19.6	0.7	79.7
03PG07	5-6	10/3/2011	0.0	0.0	19.4	1.2	79.4
	19-20	10/3/2011	0.2	0.0	16.1	4.4	79.6
03PG08	5-6	10/3/2011	0.0	0.0	11.6	7.6	80.8
	19-20	10/3/2011	0.4	0.0	12.8	3.8	83.4
03LYS2	80.5-82.3	10/3/2011	0.0	0.0	20.6	0.0	79.4
03LYS4	78.8-79.7	10/3/2011	0.0	0.0	14.9	2.4	82.7
03LFG01	20-22	10/3/2011	0.0	0.0	21.5	0.0	78.5
03LFG02	20-22	10/3/2011	0.2	0.0	21.6	0.0	78.4
03LFG03	20-22	10/3/2011	0.0	0.0	21.5	0.0	78.5
03LFG04	20-22	10/3/2011	0.0	0.0	19.9	0.0	80.1
03TR01	NA	10/3/2011	0.0	0.0	21.4	0.0	78.6
03TR02	NA	10/3/2011	0.0	0.0	21.2	0.0	78.8
03TR03	NA	10/3/2011	0.0	0.0	20.8	0.0	79.2
03TR04	NA	10/3/2011	0.0	0.0	17.8	0.8	81.4

**Table 10. Landfill Gas Measurements at IRP Site 3 (continued)
March 2012**

IRP Site 3 LFG Location	Probe Depth (ft BGS)	Sample Date	Total VOCs ppm _v	Fixed Gases			
				Methane	Oxygen	Carbon Dioxide	Balance*
				Percent			
03PG05	5-6	3/29/2012	0.0	0.0	20.8	0.4	78.8
	19-20	3/29/2012	0.1	0.0	19.7	1.2	79.1
03PG06	5-6	3/29/2012	0.0	0.0	19.9	0.7	79.4
	19-20	3/29/2012	0.0	0.0	19.9	0.6	79.5
03PG07	5-6	3/29/2012	0.0	0.0	20.6	0.3	79.1
	19-20	3/29/2012	0.1	0.0	19.7	1.2	79.1
03PG08	5-6	3/29/2012	0.0	0.0	20.0	0.4	79.6
	19-20	3/29/2012	0.1	0.0	20.2	0.2	79.6
03LYS2	80.5-82.3	3/29/2012	0.0	0.0	20.8	0.2	79.0
03LYS4	78.8-79.7	3/29/2012	0.0	0.0	20.6	0.0	79.4
03LFG01	20-22	3/29/2012	0.0	0.1	20.8	0.0	79.2
03LFG02	20-22	3/29/2012	0.0	0.1	20.8	0.0	79.2
03LFG03	20-22	3/29/2012	0.0	0.0	21.1	0.0	78.9
03LFG04	20-22	3/29/2012	0.0	0.0	21.2	0.0	78.8
03TR01	NA	3/29/2012	0.0	0.0	21.2	0.1	78.7
03TR02	NA	3/29/2012	0.0	0.0	20.9	0.2	78.9
03TR03	NA	3/29/2012	0.0	0.0	20.4	0.0	79.4
03TR04	NA	3/29/2012	0.0	0.0	20.4	0.0	79.6

(see notes last page)

Figure 8

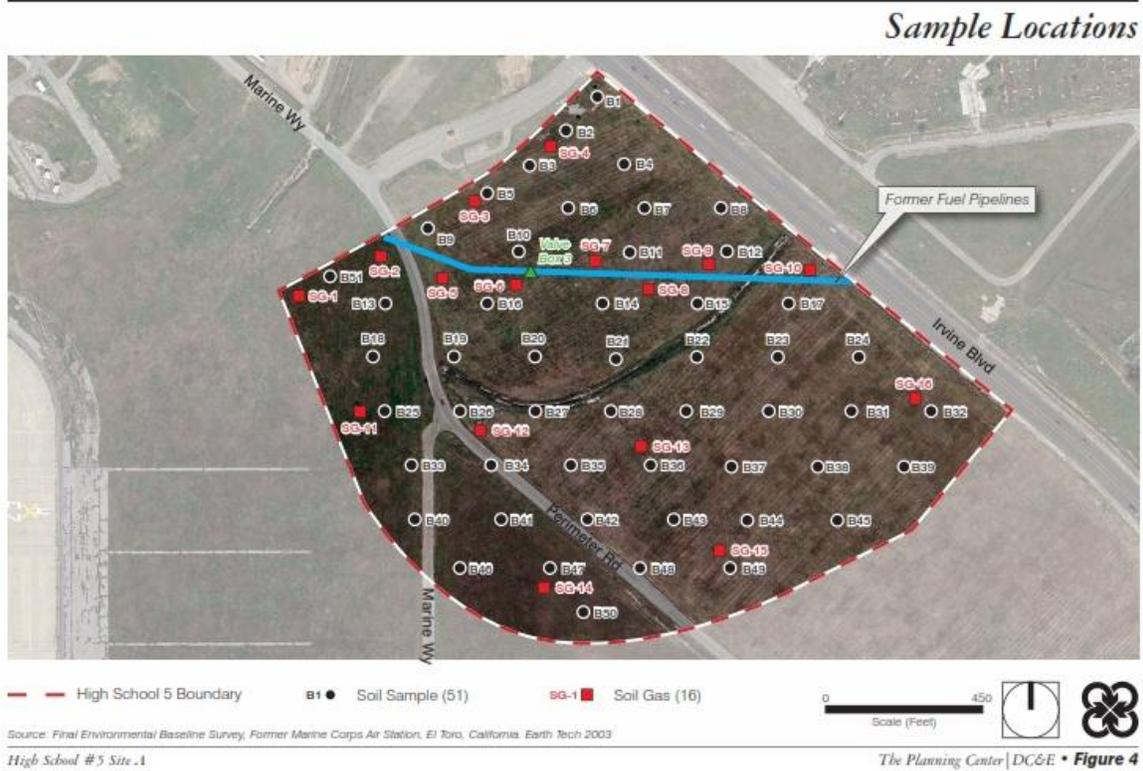


Figure 9

DCN: CEKA-2627-0004-0023
November 2013

LTM Report, IRP Sites 3 & 5
(August 2011 - December 2012)

Tables

Table 10. Landfill Gas Measurements at IRP Site 3 (continued)
September 2012

IRP Site 3 LFG Location	Probe Depth (ft BGS)	Sample Date	Total VOCs ppm _v	Fixed Gases			
				Methane	Oxygen	Carbon Dioxide	Balance*
				Percent			
03PG05	5-6	9/19/12	0.0	0.0	20.0	0.0	78.6
	19-20	9/19/12	0.0	0.0	17.6	2.2	80.2
03PG06	5-6	9/19/12	0.0	0.0	18.5	1.5	80.0
	19-20	9/19/12	0.0	0.0	18.8	1.0	81.2
03PG07	5-6	9/19/12	0.0	0.0	19.9	0.6	79.5
	19-20	9/19/12	0.0	0.0	16.3	3.5	80.2
03PG08	5-6	9/19/12	0.0	0.0	14.6	6.2	79.2
	19-20	9/19/12	0.0	0.0	14.4	0.0	81.9
03LYS2	80.5-82.3	9/19/12	0.0	0.0	21.3	0.0	78.7
03LYS4	78.8-79.7	9/19/12	0.0	0.1	13.7	3.0	83.3
03LFG01	20-22	9/19/12	0.0	0.0	20.8	0.0	79.2
03LFG02	20-22	9/19/12	0.0	0.0	21.1	0.0	78.9
03LFG03	20-22	9/19/12	0.0	0.1	21.4	0.0	78.6
03LFG04	20-22	9/19/12	0.0	0.0	20.9	0.0	79.1
03TR01	NA	9/19/12	0.0	0.0	18.9	1.1	80.0
03TR02	NA	9/19/12	0.0	0.0	19.1	1.0	79.9
03TR03	NA	9/19/12	NS	NS	NS	NS	NS
03TR04	NA	9/19/12	0.0	0.0	17.8	1.3	80.7

Note:

*Nitrogen and other trace gases

Acronyms & Abbreviations:

ft BGS = feet below ground surface

LFG = landfill gas

NA = probe depth Not Available

NS = probe inadvertently Not Sampled

ppmv = parts per million by volume

VOCs = volatile organic compounds

Figure 10

TABLE 2
SUMMARY TABLE OF VOLATILE ORGANIC COMPOUNDS (VOCs) IN SOIL GAS
 Irvine Unified School District High School #5 Site A
 South of Desert Storm Drive and Irvine Boulevard
 Irvine, California

Sample Number	Sample Date	Concentration (micrograms per liter [$\mu\text{g/L}$])								
		Benzene	Bromodichloromethane	Chloroform	Ethylbenzene	Toluene	1,2,4-Trime thybenzene	1,3,5-Trime thybenzene	Xylene s, m-, p-	Xylene, o-
SG-1@5'	12/12/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-1@15'	12/12/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-2@5' (1PV)	12/11/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-2@5' (3PV)	12/11/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-2@5' (10PV)	12/11/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-2@15' (3PV)	12/11/2013	0.070	ND<0.10	ND<0.10	0.11	0.36	0.23	0.31	0.55	0.14
SG-2@15' (10PV)	12/11/2013	0.058	ND<0.10	ND<0.10	0.14	0.44	0.36	0.46	0.74	0.18
SG-3@5'	12/12/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-3@15'	12/12/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-4@5'	12/12/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	0.17	ND<0.10
SG-4@15'	12/12/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-5@5'	12/11/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-5@15'	12/11/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-6@5'	12/11/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-6@15'	12/11/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-7@5'	12/11/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-7@15'	12/11/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-8@5'	12/11/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-8@15'	12/11/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-8@15' DUP	12/11/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-9@5'	12/12/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-9@15'	12/12/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-10@5'	12/12/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-10@15'	12/13/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-11@5'	12/12/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-11@5' DUP	12/12/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-11@15'	12/12/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-11@15' DUP	12/12/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-14@5'	12/13/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-14@15'	12/13/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-14@15' DUP	12/13/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-15@5'	12/13/2013	ND<0.030	ND<0.10	0.32	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-15@15'	12/13/2013	ND<0.030	0.20	0.84	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-16@5'	12/13/2013	ND<0.030	ND<0.10	0.15	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
SG-16@15'	12/13/2013	ND<0.030	0.14	0.52	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
Ambient Air	12/11/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
Ambient Air	12/12/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10
Ambient Air	12/13/2013	ND<0.030	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<0.10

Notes:

Samples analyzed by EPA Method 8260B by American Analytics.
 The complete laboratory analytical reports are included as Appendix E.
 ND - Non detect at the established method detection limit.
 J - Flagged results between the method detection limit and reporting limit - estimated value.

Figure 11