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Re: SWG-2018-00789; Comments and request for a public hearing on the application of the Port of Corpus Christi Authority to U.S. Army Corps of Engineers.

The Port Aransas Conservancy (“*PAC*”) provides the following comments and requests a public hearing regarding the Axis Midstream Holdings, LLC’s (“*Axis*” or “*Applicant*”) Permit Application No. SWG-2018-00789 for the proposed storage, pipeline and terminal project (the “*Pipeline Project*”).

## **I. Hearing Request**

PAC requests a public hearing to allow members of the public to voice their concerns regarding the Pipeline Project as well as other related projects at or near the Port of Corpus Christi. The U.S. Army Corps of Engineers (“*USACE*”) held a public meeting for the related Channel Deepening Project due to extremely high public interest. The air quality permit pending before the Texas Commission on Environmental Quality (“*TCEQ*”), which would authorize air emissions related to the Port of Corpus Christi Authority’s (the “*Port*”) Terminal Project, received 3,131 comments and 250 public meeting requests. The water quality permit for the desalination plant, also submitted by the Port and proposed to be located on Harbor Island, that is currently pending before TCEQ received 960 comments and 95 public meeting requests. Clearly there is substantial environmental impacts and controversy regarding the interrelated projects on and around Harbor Island, including the Pipeline Project. Furthermore, other federal and state agencies have raised concerns regarding the adequacy of the information provided by the Applicant and compliance with applicable environmental laws.

## **II. An Environmental Impact Statement is Required and the Axis Midstream Pipeline Project, the Harbor Island Terminal Project, and the Channel Deepening must be considered a Single and Complete Project.**

The USACE provided a public notice for the Pipeline Project on July 7, 2020. Applicant originally submitted an application on December 27, 2018, which was later withdrawn by the USACE for failure to provide sufficient information. An updated application for the Pipeline Project (the “*Application*”) was submitted and is the subject of this public notice.

The National Environmental Policy Act (“*NEPA*”) requires federal agencies to undertake a pre-action analysis in the form of an Environmental Impact Statement (“*EIS*”) of potential environmental impacts for “major Federal actions” that may “significantly affect” the quality of the human environment.<sup>1</sup> However, the public notice states “A preliminary review of this application indicates that an Environmental Impact Statement (EIS) is not required. Since permit assessment is a continuing process, this preliminary determination of EIS requirement will be changed if data or information brought forth in the coordination process is of a significant nature.” But it is evident from the public notice that permit issuance in this case constitutes a major Federal action that may significantly affect the quality of the human environment; thus an EIS should be required.

Furthermore, the public notice provides no reference to the Port of Corpus Christi Channel Deepening Project (SWG-2019-00067) (the “*Channel Deepening Project*”) or the Port’s Terminal Project (SWG-2018-00789) (the “*Terminal Project*”) (the three projects are hereinafter jointly referred to as the “*Projects*”). As USACE knows, the Applicant’s ultimate goal is to provide the infrastructure for fully loading very large crude carriers (“*VLCCs*”) with crude oil at Harbor Island. This can only be accomplished if all three interdependent Projects are approved. The Channel Deepening Project is unnecessary if the Terminal Project and Pipeline Project are not approved. Similarly, there is no need for the proposed Pipeline Project if the Terminal Project and Channel Deepening Project do not move forward. Each Project is dependent upon and related to the other two Projects.

Failure to treat these Projects as a single and complete project is an impermissible segmentation of an overall project. Multiple other federal and state agencies have already publicly voiced this concern. In a comment letter on the previous permit application submitted by Applicant, the U.S. Fish and Wildlife Service (“*USFWS*”), in coordination with the U.S. Environmental Protection Agency (“*EPA*”), National Marine Fisheries Service (“*NMFS*”), Texas Parks and Wildlife Department (“*TPWD*”) and the Texas General Land Office (“*GLO*”) stated:

“Impacts from these three projects overlap and could be significant. The effects to the environment from the cumulative impacts have not been analyzed... These factors are, in the assessment of the Service, supportive of the need to evaluate the Axis Midstream Holding LLC Project with an environmental impact statement (EIS).”<sup>2</sup>

If any additional clarity on the issue is needed, the U.S. Supreme Court has also spoken to this issue in *Kleppe v. Sierra Club*, where the Court recognized that §102(2)(C) of NEPA may require a comprehensive impact statement in certain situations where several proposed actions are pending at the same time. Here the Court held:

By requiring an impact statement Congress intended to assure such consideration during the development of a proposal or – as in this case – during the formulation of a position on a proposal submitted by private parties. A comprehensive impact statement may be necessary in some cases for an agency to meet this duty. Thus,

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<sup>1</sup> 42 U.S.C. § 4332(2)(C).

<sup>2</sup> USFWS Comment Letter from Charles Ardizzone, Field Supervisor, to Robert Jones, U.S. Army Corps of Engineers, regarding SWG-0218-00789, p. 2, September 6, 2019.

when several proposals for...related actions that will have cumulative or synergistic environmental impact upon a region are pending concurrently before an agency, their environmental consequences must be considered together. Only through comprehensive consideration of pending proposals can the agency evaluate different courses of action.<sup>3</sup>

Failure to evaluate the Corps' actions in a "comprehensive impact statement," would be unreasonable, from a natural resource perspective, and would be an abuse of discretion.

PAC is unaware of any legal precedent which would overturn the Supreme Court's decision in *Kleppe* and allow the USACE to not consider related projects that have a cumulative impact together, but to consider them separately. The withdrawal of permit applications and subsequent resubmittal does not allow Applicant to avoid the review of these Projects as a single and complete project. As noted in *Florida Wildlife Federation v. U.S. Army Corps of Engineers*, "Not unlike the impropriety of segmentation to avoid significance, manipulation of a project design to conform to a concept of independent utility, particularly with the intention that a permit be expedited, undermines the underlying purposes of NEPA."<sup>4</sup>

a. The Pipeline Project, In and of Itself, Requires an EIS

There is no universe in which the dredging of millions of cubic yards of contaminated sands and clay and the development of an oil terminal capable of handling VLCCs within the region's most important fishery and ecologically sensitive area, which includes the Redfish Bay State Scientific Area, does not warrant an EIS. The public notice for the Pipeline Project acknowledges that the proposed action would have an adverse impact on seagrass beds, estuarine wetlands, mangroves, and Essential Fish Habitat. The proposed Pipeline Project is part of the Applicant's overall plan to redevelop the Port of Corpus Christi that will unalterably change the surrounding communities of Port Aransas, Corpus Christi, Aransas Pass, Ingleside, and Rockport.

Numerous experts in the fields of ecology, marine biology, reproductive biology, fisheries management, water quality, and marine migration patterns note the substantial negative impacts that the construction and operation of a terminal capable of berthing VLCCs will have on the Corpus Christi, Aransas, and Redfish Bays (the "**Bay Systems**").

The Pipeline Project will also have a negative impact on numerous aspects of the local economy, including tourism and sport fishing. The wake of VLCCs will damage boats, marinas, and other infrastructure. The VLCCs will also clog up waterways leading to significantly increased boating traffic, boat damage, and human injuries.

The Pipeline Project itself will significantly affect the quality of the human environment. Even if the USACE does not treat the Projects as a single and complete project despite its earlier determination that they are, its internal policy memos indicating that they are, and Supreme Court precedent indicating that they should be, the USACE must prepare an EIS for the Pipeline Project. In fact, the need for an EIS is so clear that USFWS went so far as to write in its comment letter on Applicant's previous application, "The Service reiterates its recommendation that an EIS be

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<sup>3</sup> *Kleppe v. Sierra Club*, 427 U.S. 390.

<sup>4</sup> *Fla. Wildlife Fed'n v. United States Army Corps of Eng'rs*, 401 F. Supp. 2d 1298, 1323 (S. D. Fla. 2005).

prepared to fully analyze the impacts of the project. If the USACE proposes to continue evaluation and possible issuance of this project without an associated EIS, then the Service recommends that Permit Application SWG-2018-00789 be denied and that the project be elevated to the President's Council on Environmental Quality for higher level evaluation."<sup>5</sup> Such strong comments by another federal regulatory agency should not simply be disregarded by the USACE.

b. The Relationship Among Applicant, the Port, and Lone Star Ports

It is also important to recognize the relationship between Applicant, the Port, and Lone Star Ports, LLC ("**Lone Star Ports**"). The Port of Corpus Christi Authority's website still makes it clear the applications that have been filed with the USACE by the Port of Corpus Christi Authority, Axis Midstream Holdings, LLC, and Lone Star Ports, LLC, are all part of Port of Corpus Christi Authority's crude oil export project and its Redevelopment Project. The website states:

Lone Star Ports, a customer of the Port of Corpus Christi Authority, and its partners are in the preliminary design phase for a liquid bulk dock terminal at Harbor Island to accommodate the demand for additional crude export capacity associated with the development of new pipelines from the Eagle Ford and Permian Basin shale plays to Corpus Christi. This terminal is expected to be operational soon after completion of the federal deepening and widening of the outer reach of Corpus Christi Ship Channel (from the Gulf of Mexico to Harbor Island, from -47' to -54'). The terminal will include marine berths and necessary equipment to support loading of vessels. The remaining tankage would be in offsite locations further inland.<sup>6</sup>

If there can be any question as to the relationship between Applicant, the Port, and Lone Star Ports, documentation obtained from the Texas Commission on Environmental Quality's permitting database demonstrates that the operator of the Port's Terminal Project, Lone Star Ports, has entered a joint venture with Axis Midstream. In a letter from a TCEQ Staff Attorney, to the TCEQ Chief Clerk, dated June 7, 2019, the staff attorney states:

Axis Midstream Holdings LLC ("Axis") applied for permit No. 154527 to authorize the Harbor Island Marine Terminal. Subsequently, Axis entered into a joint venture to form Lone Star Ports, LLC ("Lone Star"). Lone Star has submitted a new application for permit No. 157150 to authorize the Harbor Island Marine Terminal and the application for permit No. 154527 will be withdrawn. Please transfer the comments, requests for public meeting, and requests for contested case hearing received on permit No. 154527 to permit No. 157150.

To be clear, Applicant originally filed the application for the air quality permit to authorize emissions from a marine terminal in November of 2018. That application was later withdrawn on June 21, 2019, after Applicant entered a joint venture with Lone Star Ports. An application to authorize air emissions from the Port's Terminal Project (a different marine terminal on a neighboring property) was submitted by Lone Star Ports on May 31, 2019. Applicant attempts to describe its Pipeline Project as "completely independent" and "unrelated" to the Terminal Project,

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<sup>5</sup> USFWS Comment Letter, p. 4, Sept. 16, 2019.

<sup>6</sup> <https://harborisland.info/uFAQs/what-is-the-port-of-corpus-christis-harbor-island-terminal-project-%EF%BB%BF/>

even though Applicant is part of the joint venture seeking to construct and operate that Terminal Project.

In Applicant's registration with the Texas Secretary of State, A.L. Berry is listed as President of the company, while D.W. Berry and M.G. Berry are both listed as Vice-Presidents. Applicant's listed address is 1414 Corn Products Rd. in Corpus Christi. Lone Star Ports, LLC, on the other hand, listed its address as 1414 Valero Way on the TCEQ Core Data Form that it completed for its air permit application. These two addresses share the same physical location.

In 2019, the Port trumpeted its lease with Lone Star Ports, which the Port characterized as "a joint venture between the Carlyle Group and the Berry's," to develop the Port's terminal site. However, later that year the Carlyle Group and the Berry's had a falling out, and the Berry's sued the Carlyle Group for breach of contract, tortious interference with contracts, and fraud, among others. In that litigation, the Berry's alleged that the Carlyle Group and two related Carlyle entities had entered into a written agreement with the Berry's which included a Term Sheet describing the parties' intent to:

invest in a project to (a) develop, construct, own and operate a hydrocarbon delivery system, which would allow hydrocarbon shippers maximum optionality to (i) deliver hydrocarbons to local refinery markets in the vicinity of Corpus Christi, Texas through tankage, shipping reception collection, consolidation, storage, transfer, staging, pumping, delivery and other facilities to be developed near Midway Junction, Texas (collectively, the "Midway Junction Facility"), and (ii) export hydrocarbons via the Midway Junction Facility through (A) related pipelines and other facilities to be developed around the Midway Junction Facility, (B) related tankage, pumping, transfer, storage, staging, delivery facilities, pipelines, and other facilities to be developed adjacent to and under Redfish Bay, Texas (collectively, the "Redfish Bay Facility"), and (C) a premier deep-water crude oil export terminal and related tankage, pipelines, shipping, pumping, transfer, exporting, and other facilities to be developed on Harbor Island, Texas (collectively, the "Harbor Island Terminal"), and (b) facilitate the dredging of the Corpus Christi ship channel to a depth of 75 feet from the Gulf of Mexico to the site of the Harbor Island Terminal to permit the loading and unloading of fully-laden Very Large Crude Carriers ("VLCCs") at the Harbor Island Terminal (collectively, the "Project"). The Project was intended to include pipeline, shipping, reception, collection, consolidation, storage, staging, transfer, delivery, exporting, and other facilities, including ( I ) the Midway Junction Facility, (II) the Redfish Bay Facility, (III) the Harbor Island Terminal (IV) other associated infrastructure, assets, facilities, and businesses, including without limitation, certain real property currently owned, leased, optioned, or otherwise controlled by Berry at Midway Junction, Redfish Bay, and Harbor Island, Texas (collectively, the "Contributed Land"), (V) to the extent applicable, additional properties and facilities to be acquired, leased, optioned, developed, or otherwise controlled by one or more Project Companies, one or more of the Plaintiffs, the Port of Corpus Christi Authority ("POCCA"), and/or third parties, and (VI) facilities for controlling and collecting tolls and/or other fees or charges from vessels that transit the portion of the Corpus Christi Ship channel to be dredged as part of the Project.

One entity to be used by the parties to the Term Sheet in connection with the Project is Lone Star Ports, LLC (“LSP”), which was formed, and which is a Plaintiff herein.<sup>7</sup>

It is clear that the Pipeline Project, Terminal Project, and Channel Deepening project are all pieces of the overall Redevelopment Project fully described above and are part of a coordinated arrangement between these parties.

Finally, the “point of contact” listed for Applicant is Matt Marra. Matt Marra also happens to be the Vice President for Regulatory Compliance and Project Management for Lone Star Ports. Any suggestion that Applicant, the Port, and Lone Star Ports are working independently and not part of a joint effort to complete the Port’s overall Redevelopment Project is wholly unreasonable and completely refuted by clear evidence to the contrary. This is a clear attempt to improperly segment the overall Redevelopment Project into smaller projects and submit applications for those projects under different entities in an attempt to avoid regulatory scrutiny. The USACE should not be a willing participant to such blatant manipulation of the required regulatory framework.

c. USACE Already Determined that the Three Projects are a Single and Complete Project

USACE is well aware of Applicant’s goals and has already determined that these three Projects constitute a “single and complete project.” On February 14, 2019, Mr. Robert W. Heinly, the Chief of the Policy Analysis Branch, issued a letter recognizing this specific issue and advising that all three Projects constitute a single project and would need to be considered together by the USACE. Of particular relevance, Mr. Heinly’s letter states:

[I]t is clear that the deepening of the [Corpus Christi Ship Channel] and the construction of the Harbor Island Terminal Facility are interdependent and should be considered a single and complete project. In addition to the Harbor Island Terminal Facility, the Corps has received a permit application from Axis Midstream Holdings to construct a series of pipelines and facilities to transport crude oil for loading onto marine transport vessels at the proposed Harbor Island Terminal Facility. Considering that Axis’ proposed project is designed to serve a single customer, the Harbor Island Terminal Facility, the Corps has concluded that the proposed pipelines and facilities are also interdependent with the Harbor Island Terminal Facility and the deepened channel.

In fact, the NEPA Implementation Procedures, 33 CFR Part 325 Appendix B, at 7(b)(1), require that all three Projects be considered together. Specifically, those guidelines provide:

(1) In some situations, a permit applicant may propose to conduct a specific activity requiring a Department of the Army (DA) permit (e.g., construction of a pier in a navigable water of the United States) which is merely one component of a larger

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<sup>7</sup> See, *Lone Star Ports, LLC, Allen Lawrence Berry, Marvin Glenn Berry, and Dennis Wayne Berry vs. The Carlyle Group LP, Carlyle Investment Management, L.L.C., and Carlyle Global Infrastructure Opportunity Fund LP*, Cause No. 2019-69452 (190<sup>th</sup> Judicial District Court of Harris County, Texas). The suit has been settled on terms not in the public record.

project (e.g., construction of an oil refinery on an upland area). The district engineer should establish the scope of the NEPA document (e.g., the EA or EIS) to address the impacts of the specific activity requiring a DA permit and those portions of the entire project over which the district engineer has sufficient control and responsibility to warrant Federal review. . . . These are cases where the environmental consequences of the larger project are essentially products of the Corps permit action.

This guidance is directly on point here where the three Projects proposed by permit applications SWG-2019-00245, SWG-2018-00789, and SWG-2019-00067 are interrelated and part of the overall project to develop Harbor Island. A failure to consider these permit applications together would be a failure to meet the intent of NEPA and follow the clear guidelines for NEPA review.

Not only would this be inconsistent with applicable regulations, it would directly contravene USACE's own policy memo on this very issue, titled, "Determination of the Requirement for an Environmental Impact Statement for Department of the Army Permit SWG-2019-00067" (the "*EIS Memo*"). In that memo, Colonel Lance N. Zetterstrom states:

NEPA and the [Council on Environmental Quality's] regulations define a cumulative effect as an impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. The range of actions that must be considered includes not only the project proposal but all connected and similar actions that could contribute to cumulative effects.

As currently proposed, PCCA's Deepening Project will provide VLCCs access to a single location on Harbor Island that has not been constructed and is not included in the project plans. There are no other facilities or potential locations along the proposed 12.8-mile deepened channel that a facility could be constructed other than on Harbor Island. To serve the Harbor Island Terminal Facility, the Corps has received a permit application from Axis Midstream Holdings to construct a series of pipelines and tank facilities to transport crude oil for loading onto marine transport vessels at the proposed Harbor Island Terminal Facility.

Setting aside the interdependent nature of the seemingly single and complete project described above, the cumulative effect of these three projects in combination with the current projects such as the Federal Improvement Project and the re-construction of the Harbor Bridge as well as past projects like the existing federal channel and Lydia Ann Mooring Barge Fleeting facility, plus future projects such as Occidental Petroleum Corporation VLCC site or the proposed Buckeye Partners VLCC facility, both located in Ingleside, Texas, the accumulation of potentially significant environmental effects becomes evident.

The Pipeline Project is absolutely necessary to transport crude oil to Harbor Island if the Terminal Project and Channel Deepening Project are to move forward. If the Pipeline Project does not move forward, there would be no reason to build a VLCC terminal on Harbor Island. Likewise, there

would be no need to dredge the Corpus Christi Ship Channel (“CCSC”) to 75+ feet deep to allow for VLCC use, if no VLCC capable terminal will be built. Therefore, the USACE should request additional information from the Applicant and the Port as to how oil will be transported from land based facilities to the Port’s Harbor Island Terminal Project. The USACE has already recognized this fact in its February 14, 2019, letter where it states:

The single and complete project shall include the deepening of the channel, construction of the Harbor Island Terminal Facility and the pipelines and facilities from Midway Tank Farm Facility in Taft, Texas to the Harbor Island Terminal Facility.

PAC is now aware of a subsequent communication, dated March 13, 2019, revising Mr. Heinly’s prior determination in which he indicated that Axis’ proposed series of pipelines and facilities to transport crude oil for loading onto marine transport vessels at the proposed Harbor Island are not interdependent with the proposed VLCC capable channel. While we have not been provided the information that caused the sudden change in USACE’s opinion, the USACE’s conclusion does not withstand even the most rudimentary analysis – how is a terminal that intends to berth VLCC not dependent upon the dredging of a VLCC-capable channel? Quite simply, if the Channel Deepening Project does not move forward, there is no way to get fully laden VLCCs into or out of the proposed Axis Terminal.

In its March 13, 2019 letter to the Port, the USACE states, “The Corps has concluded that if the proposed project provides access for fully laden VLCCs to multiple locations, then the interdependence with Harbor Island as the sole beneficiary of the project is removed. If PCCA decides to modify their project, the purpose and need will be, ‘to deepen the CCSC to accommodate transit of fully laden VLCCs from multiple locations along the CCSC to the Gulf of Mexico to more efficiently move current and forecasted crude.’”

In response, the Port sent a letter to the USACE dated April 8, 2019, stating, “After further review, we propose to undertake the following -- the [Port] will amend the permit application for the 75’ Project to extend the upstream project terminus approximately 5,600 feet west from its current location at Station 54+00 to Station 110+00. The proposed revision, shown in Figure 1 of Attachment 1, will extend the deepened ship channel to multiple additional properties and will allow additional users and property owners at Harbor Island to take advantage of increased depth for Very Large Crude Carriers (‘VLCC’).”

Interestingly, the only other party that could be served by the Channel Deepening Project is Axis, i.e., the party that entered a joint venture with Lone Star Ports who is working with the Port to permit the Terminal Project.

The attempt by the Applicant and the Port to segment these Projects violates 5<sup>th</sup> Circuit precedent in the *Piedmont Heights Civic Club, Inc. v. Moreland* case, where the Court held, “If proceeding with one project will, because of functional or economic dependence, foreclose options or irretrievably commit resources to future projects, the environmental consequences of the projects should be evaluated together.”<sup>8</sup> If the USACE allows the Port to proceed with the Channel

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<sup>8</sup> *Piedmont Heights Civic Club, Inc. v. Moreland*, 637 F.2d 430, 439 (5th Cir.1981).

Deepening Project, the Port will necessarily be committed to develop the Terminal Project due to the functional and economic ties between the two Projects. Similarly, proceeding with the Terminal Project would also necessitate from both a functional and economic perspective, the development of the Pipeline Project. As we have already noted, the Port and Applicant are working together to do just that.

Therefore, the USACE must necessarily consider all three Projects as a single and complete project. If the USACE determines that the Projects are no longer related and that they no longer need to be considered as a single and complete Project, the USACE must provide notice to the public.<sup>9</sup> Because this would change a previous determination already issued by USACE, we believe such notice should also provide a detailed legal justification that supports this decision.

### **III. Alternative Analysis**

According to the Council on Environmental Quality (“*CEQ*”) Regulations for implementing the NEPA, the analysis and comparison of alternatives is considered the “heart” of the NEPA process. For those projects requiring an EIS (which should be done here), NEPA regulations require the lead agency to evaluate alternatives to the proposed project and must “Rigorously explore and objectively evaluate all reasonable alternatives”; “devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits”; and “include reasonable alternatives not within the jurisdiction of the lead agency.”<sup>10</sup>

Even if USACE initially determines that an EIS is not yet required, it must, at minimum, conduct an Environmental Assessment (“*EA*”), in which the USACE must evaluate the potential alternatives to the Terminal Project (along with the other Projects).<sup>11</sup> Applicable NEPA regulations state that an EA “shall include brief discussions of the need for the proposal, of alternatives as required by section 102(2)(E), of the environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted.”<sup>12</sup>

The public notice states that Applicant proposes to “construct a series of facilities and pipelines to store, transport, and load crude oil into marine transport vessels” including the Midway Tank Farm, the Aransas Pass Staging Facility, a pipeline bundle that would connect the Aransas and Midway Facilities, consisting of one 2-inch fiber optic, one 6-inch gas supply; and two 36-inch crude oil pipelines, the Harbor Island Loading Terminal, and another pipeline bundle that would connect the Aransas and Harbor Island Facilities, consisting of one 2-inch fiber optic, one 6-inch gas supply, one 16-inch intermix return, and two 42-inch crude oil pipelines.

However, the public notice does not provide the stated “purpose” which is listed in the Application as “to construct facilities and pipelines to transport crude oil for loading into oil tankers.”<sup>13</sup>

The purpose of the Pipeline Project is not defined in such a way as to exclude alternatives such as deepwater off-shore terminal options. Axis states in its Application that “A draft alternatives

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<sup>9</sup> 33 C.F.R. Part 325, Appendix B 8(g).

<sup>10</sup> 40 C.F.R. §1502.14.

<sup>11</sup> NEPA §102(2)(E).

<sup>12</sup> 40 C.F.R. §1508.9(b).

<sup>13</sup> Revised Application, Attachment 3, p. 2.

analysis is currently being prepared and will be provided upon completion.” Applicant later provided an “Alternative Analysis – Executive Summary” dated May 2, 2019. The totality of the alternative analysis with regard to the proposed terminal portion of the Pipeline Project is as follows:

The Harbor Island Terminal site was selected based on availability, accessibility and location to existing infrastructure capable of accommodating crude carrier vessel movement. The selected site is situated adjacent to the Corpus Christi Ship Channel. The land portion of the Harbor Island site is non-wetland. The Site and surrounding areas support, or have supported, marine operations in the past.

It goes without saying that this “analysis” falls woefully short of the alternative analysis requirements under NEPA.

a. Offshore Option

One reasonable alternative the USACE should consider is an offshore terminal designed to accommodate VLCCs, which would result in significantly fewer negative economic, environmental, and public interest impacts. The EA/EIS should frame the alternative analysis on the broader need of the Project and not limit such an evaluation solely to the construction of a VLCC-capable oil terminal located on Harbor Island. Therefore, the USACE should consider whether the ultimate purpose and need could be met with an offshore, deepwater port using either a single point mooring (“*SPM*”) buoy system or an offshore platform terminal system. As noted in *Natural Resources Defense Council v. Callaway*, an EIS must evaluate “alternatives to the proposed action as may partially or completely meet the proposal’s goal and it must evaluate their comparative merits.”<sup>14</sup> An offshore terminal would allow for the efficient movement of crude oil and accommodate future growth in energy production. Furthermore, taking the terminal to an offshore location would eliminate the need to construct a channel project. Thus, the purpose of the Project could be addressed through the offshore option.

A detailed alternative analysis is necessary to meet the requirement for the USACE to “take a hard look” at the environmental impact of the proposed project and reasonable alternatives.<sup>15</sup> Both offshore options would “require virtually no dredging,”<sup>16</sup> and would have a significantly reduced impact than a VLCC terminal within one of Texas’ most productive, yet sensitive, estuary ecosystems.

Furthermore, Harbor Island is located within the Redfish Bay State Scientific Area, which contains unique, fragile biological communities including seagrass beds, oyster reefs, marshes and mangroves, and represents critical spawning, feeding, and nursery habitat (i.e. essential fish habitat) for shrimp, crabs and fishes of ecological, commercial, and recreational importance to the

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<sup>14</sup> *Natural Resources Defense Council v. Callaway*, 524 F.2d 79 (2<sup>nd</sup> Cir. 1975).

<sup>15</sup> *Marble Mountain Audubon Soc’y v. Rice*, 914 F.2d 179, 182 (9<sup>th</sup> Cir. 1990)(determining that the Forest Service did not take a “hard look” at the impact of the proposed project on a biological corridor by failing to contain a significant discussion of the issue. Instead, the EIS concluded, without any apparent study or supporting documentation, that the preservation of a 1/2-mile wide strip bisecting the drainage will be sufficient to maintain the corridor.); *see also*, *Natural Resources Defense Council, Inc. v. Morton*, 458 F.2d 827, 838 (D.C. Cir. 1972).

<sup>16</sup> Channel Deepening application, A-32.

region. The Aransas channel, for example, supports the largest and most important spawning aggregations and migrations of Red drum, Spotted seatrout, Sheepshead, and Southern flounder that support a multi-million dollar sport fishing industry in the surrounding communities. Seagrasses also provide food for sea turtles, shorebirds and waterfowl. Wading birds use mangroves and marshes for roosting, feeding and nesting habitat.

Failure to fully evaluate the potential impacts of the alternatives and to provide documentation supporting the USACE's final determination would fall short of NEPA's mandate to take a hard look at the environmental impact of the proposed project and its alternatives.

Other federal agencies have focused in on this issue, as noted in USFWS' comment letter where it stated:

Since the export terminal is proposed to utilize the depths already authorized for the Corpus Christi Ship Channel 54-foot deepening project, alternative locations for the export terminal component might be available. The Service is concerned that the applicant is already planning to deepen their proposed mooring basin if the CDP 81-foot is authorized and that this is the actual determining factor for the proposed export terminal location rather than an analysis of alternate, less damaging, sites.

A robust range of alternatives will include other options, in addition to the offshore option, for avoiding significant environmental impacts. The environmental impacts of the proposal and alternatives should be presented in comparative form. The potential environmental impacts of each alternative should be quantified to the greatest extent possible. Finally, because an EIS should be required, the EIS should clearly describe the reasons why any reasonable alternatives were not chosen or fully evaluated.

No such analysis has been provided for the public's review.

b. Dredging and Disposal Sites for Dredged Materials

In accordance with the Federal Guidelines for Specification of Disposal Sites for Dredged or Fill Materials ("*Disposal Site Guidelines*"),<sup>17</sup> "no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences." The mandate here is clear. What is unclear is how the USACE can permit the discharge of dredged material, when there is a practical alternative that would "require virtually no dredging."<sup>18</sup>

Even if an offshore terminal would result in some discharges of dredged or fill material in ocean waters, it would have significantly less adverse impact on the aquatic ecosystem than the proposed discharges from the Pipeline Project which will require dredging of at least 5.6 million cubic yards of clay and sand.

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<sup>17</sup> 40 C.F.R. Part 230.

<sup>18</sup> See Port of Corpus Christi Authority Channel Deepening Project Application, A-32.

The regulations explain that “practicable alternatives include, but are not limited to:

- (i) Activities which do not involve a discharge of dredged or fill material into the waters of the United States or ocean waters; [and]
- (ii) Discharges of dredged or fill material at other locations in waters of the United States or ocean waters.”<sup>19</sup>

In its comments on the previous Pipeline Project application, the U.S. Environmental Protection Agency (“**EPA**”) states that “As provided in the [public notice], the information provided by the applicant does not appear to adequately reflect consideration of all potential direct, secondary, and cumulative impacts to these functions and values.”<sup>20</sup> EPA’s comments go on to say, “it is anticipated there is potential for significant impacts to Redfish Bay, and it is unclear if possible environmental losses related the impacts upon aquatic ecosystems, nearby seagrasses, and organisms have been evaluated.” There is nothing in the public notice or the available Application materials that suggests anything more than a minimal evaluation has been conducted.

An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. If it is otherwise a practicable alternative, an area not presently owned by the applicant which could reasonably be obtained, utilized, expanded or managed in order to fulfill the basic purpose of the proposed activity may be considered.<sup>21</sup>

In summary, any permitted discharge into waters of the U.S. (“**WOTUS**”) must be the least environmentally damaging practicable alternative available to achieve the project purpose. As already noted, the Project’s purposes can be achieved with an offshore terminal which would have significantly less adverse impacts from the discharge of dredge and fill materials.

The USACE’s review of this permit application should include an evaluation of the project alternatives in the context of the least environmentally damaging discharges in order to demonstrate the Project’s compliance with the 404(b)(1) Disposal Site Guidelines. The USACE’s review should address alternatives, including the offshore option, to avoid and minimize the discharge of 5.6 million cubic yards of clay and sand.

Even if the USACE determines that the discharge of dredge and fill material, as proposed, is the least environmentally damaging alternative, any review by USACE must also address the potential impacts of contamination contained in the dredge material (discussed below in Section IV).

#### **IV. Cumulative Impacts**

NEPA requires the lead federal agency to consider the potential cumulative impacts of proposals under review. NEPA regulations state, “once the scope of analysis has been defined, the NEPA analysis for that action should include direct, indirect and cumulative impacts on all Federal

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<sup>19</sup> 40 C.F.R. §230.10(a)(1).

<sup>20</sup> EPA Comment Letter, from Mark A. Hayes, Chief NDPES/Wetlands Review Section to Bobby Jones, Regulatory Division, U.S. Army Corps of Engineers, September 4, 2019, pp. 1-2.

<sup>21</sup> 40 C.F.R. §230.10(a)(2).

interests within the purview of the NEPA statute.”<sup>22</sup> Cumulative impacts may result when the environmental effects associated with the proposed action are superimposed on or added to impacts associated with past, present, and reasonably foreseeable future projects.

As previously noted, the U.S. Supreme Court has already spoken to this issue in *Kleppe v. Sierra Club*, where the Court held that when:

related actions that will have cumulative or synergistic environmental impact upon a region are pending concurrently before an agency, their environmental consequences must be considered together. Only through comprehensive consideration of pending proposals can the agency evaluate different courses of action.<sup>23</sup>

Even if the Pipeline Project, Channel Deepening Project, and the Harbor Island Terminal Facility Project are not considered a single and complete project (even though they clearly should be, as numerous documents from the USACE itself have already noted), the cumulative impacts of these three projects must be evaluated together. In fact, the NEPA Implementation Procedures, 33 CFR Part 325 Appendix B, at 7(b)(3), provide a specific example that is directly applicable here. The regulations provide:

For those activities that require a DA permit for a major portion of a shoreside facility, the scope of analysis should extend to upland portions of the facility. For example, a shipping terminal normally requires dredging, wharves, bulkheads, berthing areas and disposal of dredged material in order to function. Permits for such activities are normally considered sufficient Federal control and responsibility to warrant extending the scope of analysis to include the upland portions of the facility.

In this instance, a shoreside facility, i.e., the Terminal Project, not only requires dredging in order to provide access to VLCCs, but also requires the development of oil pipeline facilities (i.e., the Pipeline Project) in order to transport the crude from land-based storage facilities to the proposed terminal. Thus, the NEPA Implementation Procedures are directly on point and require analysis of the cumulative impacts of all three projects together.

Only through comprehensive consideration of all three pending Projects can the USACE comply with its own regulations and U.S. Supreme Court precedent.

## **V. Dredge Material Placement Areas and Use of Contaminated Materials**

The USACE should evaluate the potential impacts of contamination within the material dredged from Harbor Island that will be discharged into Ocean Dredged Material Disposal Sites (“ODMDS”). Specifically, the Disposal Site Guidelines require that discharges of dredged material shall not be permitted if the discharge:

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<sup>22</sup> 33 C.F.R. Part 325, Appendix B, 7(b)(3).

<sup>23</sup> *Kleppe v. Sierra Club*, 427 U.S. 390.

- Causes or contributes to violations of any applicable State water quality standard;
- Violates any applicable toxic effluent standard or prohibition under section 307;
- Jeopardizes the continued existence of species listed as endangered or threatened under the Endangered Species Act or results in likelihood of the destruction or adverse modification of designated critical habitat; or
- Violates any requirement imposed by the Secretary of Commerce to protect any marine sanctuary designated under Title III of the Marine Protection, Research, and Sanctuaries Act of 1972.<sup>24</sup>

The public notice fails to mention that Harbor Island was previously the site of Exxon and Fina bulk fluids export facilities, including tank farms, petroleum pipelines, loading and unloading facilities, and docks. According to documents obtained from the Railroad Commission of Texas, there are at least three areas on the former Exxon site where the most recent analysis found total petroleum hydrocarbons (“*TPH*”) in excess of 10,000 mg/kg.<sup>25</sup> In 1995, a Phase I Environmental Site Assessment was performed on the former Fina site which showed numerous areas with soil TPH concentrations above 50,000 parts per million (“*ppm*”).<sup>26</sup> Subsequent evaluations showed the following TPH concentration within the former Fina site:

- Landfarm/Pond area: up to 75,996 mg/Kg at two feet deep and 51,329 mg/Kg at four feet deep;
- Landfarm/North of Tank 734: up to 49,998 mg/Kg at two feet deep and 28,424 mg/Lg at four feet deep.
- Numerous samples had TPH over 70,000 mg/kg.<sup>27</sup>

That documented evidence hardly demonstrates that the dredged material is suitable for disposal in compliance with the Disposal Site Guidelines. The Fina site also had 1,4-dioxane and aromatic hydrocarbon compounds detected in the groundwater.<sup>28</sup>

Furthermore, the Railroad Commission placed restrictive covenants on these properties due to the contamination in these areas.<sup>29</sup> The restrictive covenant applicable to the former Exxon site states that “penetration or excavation of impacted soil or groundwater zones shall be done in a way that prevents release of contaminants to any other zone or media.”<sup>30</sup>

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<sup>24</sup> 40 C.F.R. §230.10(b).

<sup>25</sup> Attachment A, Work Plan for Soil Relocation, Harbor Island Station, from Sam Enis, SQ Environmental, LLC to Armeis Harbett, Environmental Permits and Support, Railroad Commission of Texas, (p. 2 of 166 of Attachment A), January 23, 2020.

<sup>26</sup> Attachment B, FINA Phase I Investigation & Evaluation, Table 1 (and pp. 13-19 of 28 of Attachment B).

<sup>27</sup> Attachment C, FINA Phase III Investigation & Evaluation, (p. 16 of 45 of Attachment C).

<sup>28</sup> Attachment D, Additional Soils & Groundwater Investigations, (pp. 19-20 of 41 of Attachment D).

<sup>29</sup> Attachments E and F.

<sup>30</sup> Attachment E, (p 5 of 35 of Attachment E).

In fact, earlier this year the Railroad Commission rejected a proposal by the Port to remove contaminated soils from the former Exxon site and dispose of them on another part of Harbor Island, stating:

Evaluating factors such as the location within a coastal natural resource area, the proximity to wetlands, the shallow groundwater, and the soil composition, indicates the proposed facility location is not a viable option for the land spreading of oil and gas waste. Technical Permitting has determined that permit issuance may cause or allow pollution to surface or subsurface waters of the state.<sup>31</sup>

The Applicant needs to explain to the public and to the USACE how the Railroad Commission can determine that the disposal of contaminated soil from Harbor Island site would lead to pollution, yet the Applicant can claim that “no adverse environmental effects would be expected from dredging or placement of the sediment from the project area into the New Work ODMDS.” Such is clearly inconsistent and the USACE must fully review and address this clear inconsistency before issuing any permit to the Applicant.

In fact, the Applicant attempts to give the appearance that it has evaluated these soils for contamination, when it clearly has not. The public notice states:

The CCSIP [Corpus Christi Ship Channel Improvement Project] tested the suitability of both new work material and maintenance material from the Corpus Christi Ship Channel for offshore disposal under Marine Protection, Research and Sanctuaries Act (MPRSA) Section 103 ... Based on the results of the sampling, testing, and evaluation completed in 2018, site water, and elutriate, as well as toxicity and bioaccumulation testing, a lines of evidence analysis concluded that no adverse environmental effects would be expected from dredging or placement of the sediment from the project area into the New Work ODMDS. The sediments from the project area met the Limiting Permissible Concentration (LPC) and were deemed suitable for open water ocean placement.

Either the Applicant is attempting to fool the public into thinking that it is providing the test results of soil sampling conducted on Harbor Island (it is not) or the Applicant is attempting to use the sampling of material at the bottom of the Corpus Christi Ship Channel as a surrogate for sampling soils on Harbor Island (which it does not have authority to do, and such would be clearly inappropriate given the clearly documented pollutants existing in the soils on Harbor Island). Either way, the fact that this language made it into the public notice is alarming. The soils on Harbor Island are known to be contaminated. Dredging these soils and then discharging them again will cause significant releases of hydrocarbons and related toxins into the Bay Systems.

Therefore, the USACE must evaluate how the dredged material will be tested for contaminants prior to placement in order to comply with the Disposal Site Guidelines. The dredged materials are proposed to be placed in authorized disposal facilities. These dredged materials could result

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<sup>31</sup> Attachment G, Denial of Application for Permit for Private Landtreatment Facility, from Tiffany Humberson, Manager - Environmental Permits and Support, Railroad Commission of Texas, to Port of Corpus Christi Authority, (p. 1 of 3 of Attachment G), February 18, 2020.

in a discharge of effluent to WOTUS and will require water quality certification under Section 401 of the Clean Water Act.

The EPA has expressed concerns about the adequacy of the information provided by the Applicant with regard to the discharge of dredged material, noting that it is not clear that the Application “will sufficiently enable the Corps to make a legally defensible permit decision in regard to compliance with the [Disposal Site Guidelines].”<sup>32</sup> The EPA concludes that compliance with the requirements of Section 230.10(c) of the Disposal Site Guidelines has not been clearly demonstrated.<sup>33</sup> Furthermore, the EPA states that the information provided by the Applicant “does not appear to adequately reflect consideration of all potential direct, secondary, and cumulative impacts to these functions and values,” as required under Section 230.10(c) of the Disposal Site Guidelines.<sup>34</sup>

We echo the comments made by EPA. The USACE must fully evaluate whether the Applicant has met the legal standards required under EPA’s Disposal Site Guidelines.

We also fully agree with the recommendation from Texas Parks and Wildlife Department (“*TPWD*”) with regarding to the Terminal Project that “Soils [on Harbor Island] should be tested for contaminants to determine appropriate disposal methods and locations.”<sup>35</sup>

## **VI. Public Interest/Public Need**

In reviewing a proposed project’s impact on the public interest, NEPA regulations require that the USACE must evaluate the following:

- The relative extent of the public and private need for the proposed structure or work;
- Where there are unresolved conflicts as to resource use, the practicability of using reasonable alternative locations and methods to accomplish the objective of the proposed structure or work; and
- The extent and permanence of the beneficial and/or detrimental effects which the proposed structure or work is likely to have on the public and private uses to which the area is suited.<sup>36</sup>

The Port of Corpus Christi and surrounding ports already operate a number of terminals that load crude oil tankers. In fact, the existing terminals are already capable of serving VLCCs with some lightering. The need for lightering may only be temporary as other offshore platforms are being explored that would be fully capable of serving VLCCs. The fact that the objectives of the Pipeline Project and related Terminal and Channel Deepening Projects can be achieved through other means demonstrates that there is no real need for these Projects. Furthermore, any benefit provided

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<sup>32</sup> EPA Comment Letter, p. 1.

<sup>33</sup> *Id.*

<sup>34</sup> *Id.* at 1-2.

<sup>35</sup> TPWD Comment Letter, from Robin Riechers, Director of Coastal Fisheries to Robert Jones, U.S. Army Corps of Engineers, Galveston District and Leslie Savage, EPA Region 6, p. 2, September 20, 2019.

<sup>36</sup> 33 C.F.R. §320.4(a)(2).

by these Projects will be primarily realized by the Port of Corpus Christi, Lone Star Ports, and Axis, not the public at large.

The Projects will also result in long-term damage to the public's interest in healthy bays and fisheries, tourism and sport fishing, seafood production, protection of endangered species, recreation and economic security. The damage to these very public and shared interests far outweighs the benefits gained by the Applicant in constructing multiple crude oil storage tank facilities and multiple pipelines through Redfish Bay and the RBSSA so that two new VLCC terminals can be built.

The USACE must fully evaluate whether there is a public need for the proposed Projects, whether the need for the Projects can be accomplished through viable alternatives, and whether the proposed Projects will negatively affect the public use of the surrounding area.

## **VII. Wetlands**

The public notice indicates that the Pipeline Project will result in:

- 14.01 acres of temporary trench and fill impacts to WOTUS, including wetlands (Midway to Aransas Facility Pipelines);
- 17.33 acres of permanent impacts to WOTUS (Aransas Pass Staging Facility);
- 10.64 acres of temporary impacts to tidal flats (Aransas Facility to Harbor Island Pipelines);
- 0.45 acres of impacts to black mangrove (Aransas Facility to Harbor Island Pipelines); and
- 0.13 acres of impacts to estuarine wetlands (Aransas Facility to Harbor Island Pipelines);

In addition, the public notice indicates that the Pipeline Project will temporarily impact 7.84 acres of seagrass beds and 0.33 acres of estuarine emergent shoreline wetlands. The public notice describes these impacts as temporary, but in reality, open trenching through sea grass beds will take decades to restore, if ever.

USFWS also voiced its concern regarding wetland and sea grass impacts, arguing that Applicant has made an “unsubstantiated claim in Permit Application SWG-2018-00789 that the crossing of the Redfish Bay area would result in only temporary impacts to jurisdictional waters and wetlands including seagrasses and tidal flats...A review of historic aerial imagery illustrates how seagrass beds can be scarred for years with the single pass of a boat propeller, and tidal flats by a crossing vehicle. Trenching proposed by the applicant is even more damaging.”<sup>37</sup>

Without additional information, it is impossible to fully evaluate the potential harm to wetlands and seagrasses. However, it is difficult to believe that the construction of a terminal capable of berthing two VLCCs and which will require the dredging of 5.6 million cubic yards of sand and clay, will only impact jurisdictional WOTUS in the small amounts described in the public notice. Furthermore, the Applicant appears to believe that open trenching will only impact sea grasses solely within the construction footprint and fails to acknowledge that the Pipeline Project would also negatively affect sea grasses due to burial during trenching or reduction in light availability. Finally, as previously noted, this Pipeline Project must be considered in conjunction with the

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<sup>37</sup> USFWS Comment Letter, pp. 2-3, Sept. 6, 2019.

Channel Deepening Project and the Terminal Project, both of which will have substantial impacts on WOTUS. It is not clear how Applicant calculated the number of WOTUS acres that would be impacted by the Pipeline Project. A much more detailed analysis of the WOTUS impacts, and how those impacts were calculated (both temporary and permanent), should be provided to the public for review.

In describing the types of wetlands that it has determined perform functions important to the public interest, the USACE has listed eight characteristics. The wetlands and seagrasses that would be affected by the Pipeline Project, as well as the other two Projects, meet each and every one of those characteristics. The wetland characteristics found by USACE to be important to the public are:

- Wetlands serve significant natural biological functions, including food chain production, general habitat and nesting, spawning, rearing and resting sites for aquatic or land species;
- Wetlands are often set aside for study of the aquatic environment or as sanctuaries or refuges;
- Wetlands help to maintain natural drainage characteristics, sedimentation patterns, salinity distribution, flushing characteristics, current patterns, or other environmental characteristics;
- Wetlands are significant in shielding other areas from wave action, erosion, or storm damage. Such wetlands are often associated with barrier beaches, islands, reefs and bars;
- Wetlands serve as valuable storage areas for storm and flood waters;
- Wetlands are groundwater discharge areas that maintain minimum baseflows important to aquatic resources and those which are prime natural recharge areas;
- Wetlands serve significant water purification functions; and
- Wetlands may be unique in nature or scarce in quantity to the region or local area.

i. Biological Function

The wetlands that will be impacted serve as feeding, nesting, and nursery sites for a wide variety of marine and terrestrial species, including several federally-listed endangered species, including the hawksbill sea turtle, green sea turtle, Kemp's Ridley sea turtle, leatherback sea turtle, loggerhead sea turtle, whooping crane, piping plover, red knot, and others.

ii. Redfish Bay State Scientific Area

Portions of the wetlands that may be impacted by the Pipeline Project are part of the Redfish Bay State Scientific Area ("**RBSSA**"). Other than the Laguna Madre, Redfish Bay represents the most extensive area of pristine seagrass beds and is also the northern range limit for large beds of turtle

grass and manatee grass. Furthermore, RBSSA is a public land designated as a state scientific area under Chapter 26 of the Texas Parks and Wildlife Code.<sup>38</sup>

Chapter 26 of the Parks and Wildlife Code states that a department, agency, political subdivision, county, or municipality of this state may not approve any program or project that requires the use or taking of public land designated as a park, recreation area, scientific area, wildlife refuge, or historic site, unless it holds a public hearing and determines that there is “no feasible and prudent alternative to the use or taking of such land” and the project “includes all reasonable planning to minimize harm to the land resulting from the use or taking.” Therefore, the RBSSA is subject to the procedural requirements of Chapter 26. This statute may also apply to other designated public lands that would be impacted by the proposed Project.

iii. Destruction or Alteration of Environmental Characteristics, Storm Damage, Storm Waters

In connection with its overall Harbor Island Redevelopment Plan, the Port has applied for a wastewater discharge permit from the TCEQ, which would allow it to dump up to 95.6 million gallons per day of concentrated salt water with a maximum total dissolved salt content of 77,460 mg/L directly into Corpus Christi Bay. In addition, the significant change in depth of the CCSC will undoubtedly affect hydrodynamics of the connection between the Bay Systems and the Gulf of Mexico, thereby directly altering the salinity within the bays.

The USACE should evaluate not only the impacts of increased salinity due to the discharge of concentrated salt water from the desalination plant but must also evaluate on a quantitative basis the likely effects of the proposed channel enlargement on exchanges of water, salt, organic matter, nutrients, sediment, and organisms between the Bay Systems and the nearshore Gulf of Mexico.

It is also clear that the Pipeline Project, along with the Terminal Project and the Channel Deepening Project, will impact sedimentation patterns within the Bay Systems. Maybe more importantly, the Projects will undoubtedly impact storm surge, as even more water will be pushed into the Bay Systems. For a region that was devastated by Hurricane Harvey in 2017, the impact on storm surge and safety is of utmost importance to the public interest.

The USACE must evaluate on a quantitative basis the increased risk of storm surges during hurricanes, tropical storms and other weather events due to the proposed channel enlargement.

iv. Wetlands Unique and Scarce in Quantity

The Bay Systems in the immediate vicinity of the proposed Pipeline Project account for one of the nation’s most unique assortment of tidal flats, tidal marshes, mangroves, unvegetated shallows, and extensive seagrass beds that represent essential breeding, nursery, forage, and cover habitats for many species of fish and wildlife. Areas where various types of environmental communities blend together are called ecotones, which biologists consider to be of great environmental importance, as they tend to support a large number and wide variety of species, have greater genetic diversity, and allow for the mixing of distinct species populations.

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<sup>38</sup> 31 Tex. Admin Code §57.921.

This should come as no surprise, as the USACE has already acknowledged the importance of the wetlands in this area. In its March 7, 2019 memo, *Determination of the Requirement for an Environmental Impact Statement for Department of the Army Permit, SWG-2019-00067*, the USACE states:

In the context of the geographic area, numerous important resources may be affected. The largest neighboring resource, located 20 miles south of the project site, is the Padre Island National Seashore, the largest stretch of undeveloped barrier island in the world and home to the National Park Service's Division of Sea Turtle Science and Recovery. Immediately to the north of the project site is San Jose Island, a privately-owned undeveloped barrier island known to be occupied by numerous Endangered Species Act (ESA) federal listed threatened and endangered sea turtle and bird species, including Whooping Cranes (*Grus americana*). Immediately behind San Jose Island is Redfish Bay State Scientific Area (RBSSA), a state designated 14,000-acre area for the purpose of education, scientific research, and preservation of flora and fauna of scientific or educational value. In addition, the area includes the Mission Aransas National Estuarine Research Reserve (MANERR), a state and federal partnership that conducts research, education, and stewardship programs funded by the National Oceanic and Atmospheric Administration (NOAA). The MANERR is the third largest National Estuarine Research Reserve (NERR) in the United States and the only NERR in Texas.<sup>39</sup>

There is no question the Projects will negatively impact wetlands that perform functions important to the public. Therefore, the USACE review must evaluate the detrimental impacts on the natural wetlands, seagrasses, and scientific research areas when compared to the nonexistent impacts that would result from an offshore option.

In addition, the locations of seagrasses and some of the other important wetlands are known to change over time. It is not clear what information or source material Applicant relied on in determining the extent of sea grass disturbance that the Pipeline Project will cause. Previous studies and out-of-date Texas Parks and Wildlife seagrass mapping tools are not sufficient or reliable sources of the locations of important habitats. There are more current data available on the locations of seagrasses from the TPWD and from scientists at Texas universities. USACE must further evaluate the locations of seagrasses and wetlands and should not rely solely on the information provided in the application.

### **VIII. Wetland Mitigation Plan**

Under EPA and the USACE's Compensatory Mitigation Rules, "the permittee must prepare a draft mitigation plan and submit it to the district engineer for review," which must include, among other items, a mitigation work plan, maintenance plan, performance standards, and monitoring requirements.<sup>40</sup> While the permittee is not required to provide the mitigation plan prior to public

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<sup>39</sup> USACE, Galveston District, Policy Analysis Branch, *Determination of the Requirement for an Environmental Impact Statement for Department of the Army Permit, SWG-2019-00067*, March 7, 2019.

<sup>40</sup> 30 C.F.R. §230.94(c)(1)(i); the items to be included in the draft mitigation plan are found in 30 C.F.R. §§230.94(c)(2) through (c)(14).

notice, the public and other regulatory agencies must be given an opportunity to evaluate the potential effects of the proposed plan.

Here, the Applicant has proposed only a non-binding summary of its restoration plans to address negative impacts to aquatic resources. These plans lack any specificity and fall far short of the requirements under the Compensatory Mitigation Rules. Applicant has failed to provide any mitigation plan to address permanent impacts from the Pipeline Project. The Pipeline Project's total impact on jurisdictional wetlands and sea grasses is over 50 acres, yet the Mitigation Plan that Applicant has provided solely addresses temporary impacts to 8.17 acres of wetlands, including 7.84 acres of sea grasses. Furthermore, the fact that these impacts to sea grasses are classified as temporary may not be appropriate given the amount of time it takes to re-establish sea grass beds. Even so, this mitigation plan appears to be woefully inadequate.

Important factors that USACE should consider in evaluating the proposed Mitigation Plan is the proximity to the area of seagrass impacts and the amount of time it will take to mitigate the impact.

The impacted sea grass beds are located in the Aransas Bay Sub-basin, while the proposed mitigation area, Croaker Hole, is located in the Corpus Christi Bay Sub-basin, approximately eight miles away from the location of impacted seagrass beds.

In addition, restoration of seagrasses is often unsuccessful. Applicant's Mitigation Plan is to construct a breakwater and allow seagrasses to naturally re-establish. If sufficient seagrass re-establishment and expansion has not occurred after the second growing season, then Applicant proposes to plant seagrass plugs in the mitigation area, though transplanting sea grasses has achieved only limited success.

Due to the limited success of plating seagrasses, the Mitigation Plan should require regular monitoring and multiple follow up plantings until the area is actually growing seagrasses. Planting seagrass in a non-vegetated site means the Applicant is effectively attempting to grow them in locations where they do not grow on their own. Finally, seagrasses being destroyed in Redfish Bay are likely turtle grass (*Thalassia*). Applicant proposes to use plugs of *Thalassia* and widgeon grass (*Halodule*). Because *Halodule* is a pioneering species it, if any species, is more likely to be successful, thereby replacing a climax species with a pioneering species.

Even if the restoration of sea grasses in Croaker Hole were to be successful, these sea grasses are not as biologically valuable as those located in Redfish Bay. The seagrasses in Redfish Bay known to be critical nursery habitat for numerous fish and shellfish species. The Croaker Hole location is both too far from a tidal inlet and too isolated from circulation to serve as nursery habitat for early life stages of species that enter the estuaries from the Gulf; therefore any sea grasses in Croaker Hole will not serve as important a biological function as those in Redfish Bay.

It should also be noted that there are no efforts, other than backfilling of the trench, that have been proposed to restore seagrasses following direct impacts due to pipeline construction. Backfilling may slightly facilitate eventual restoration of seagrass in the trench and on the dredged material placement areas adjacent to the trench, but methods to more aggressively facilitate restoration are available and should be explored.

The proposed mitigation area is not only eight miles away from the impact site, but is in an entirely different bay. The likelihood of re-establishing sea grasses is not high. If sea grass beds are re-established it will take years to mitigate the damage caused by the pipeline trenching. Furthermore, there are no efforts being proposed to actually re-establish sea grasses where they have been temporarily impacted by trenching.

The Mitigation Plan provides limited, if any, baseline information regarding the impacted WOTUS. The Mitigation Plan does not include a site protection instrument, thus there is no guarantee that the mitigation area will be protected in perpetuity. Furthermore, the success criteria in the Mitigation Plan for Year 1 is a minimum average of 20% hydrophytic plant cover in the restoration area. However, the baseline description does not provide the current percent of hydrophytic plant cover. Thus, there is no way to assess whether any meaningful mitigation has occurred.

In sum, the Pipeline Project will impact over 50 acres of wetlands and sea grasses, the Applicant has not proposed any mitigation related to permanent impacts, and has only proposed mitigation for a total of 8.17 acres of wetlands and sea grass impacts, and even the Mitigation Plan that has been proposed does not meet all of the 2008 Mitigation Rules. Furthermore, the Application does not propose any mitigation for impacts to open water, Essential Fish Habitat, or endangered species.

A much more robust and binding mitigation plan is required and must be made available for public review. Furthermore, the USACE review must include a functional assessment of the impacts of all dredged material disposal, including proposed benefits at beneficial use sites, as well as geotechnical analysis, settlement curves, dredging plans, construction sequencing, containment degradation, planting plans, target elevations, sediment budgets and transport modeling, and must evaluate whether appropriate ecological performance standards have been included in the mitigation plan.

## **IX. Essential Fish Habitat/Marine Sanctuaries/Tidal Inlets**

The Aransas Pass inlet and associated region is unlike any other along the Gulf Coast in terms of key ecological interactions that occur in the area. The Aransas Pass is the primary conduit for young marine life migrating between the Bay Systems and the Gulf of Mexico to either spawn or reach their nursery habitats. As you know, these Bay Systems also support the Nueces and Mission-Aransas Estuaries, which are home to numerous species of marine shrimp, crabs, and finfish that utilize the varied habitat types found in these Bay Systems, including oyster reefs, seagrass beds, mud flats, and shoreline vegetation. This ecosystem is truly unique and is not replicated anywhere else.

The area surrounding Harbor Island has been defined as “*Essential Fish Habitat*,” as specified by the Magnuson-Stevens Fishery Conservation Act (“*MSFCA*”). The MSFCA provides for the conservation and management of fishery resources through fishery management plans (“*FMPs*”). As a part of the FMP provision, fisheries are required to identify and describe essential fish habitat. Applicants seeking to obtain authorization for actions that might adversely affect designated essential fish habitat must engage in consultation with the National Marine Fisheries Service (“*NMFS*”).

Harbor Island itself is located at the channel confluence for this major tidal inlet for the region, and the area has a remarkable bottlenecking effect that concentrates marine life, resulting in an extraordinarily high abundance of economically and ecologically important species in the vicinity of the potentially impacted areas due to various development projects (e.g., desalination outflows, VLCC terminals, dredging, and others). Flatfish, penaeid shrimp, red drum, blue crabs, Atlantic tarpon, and numerous other aquatic species utilize this pass on a seasonal basis to fulfill biological requirements within their life history.

The Aransas Pass tidal inlet is a key point for the Bay-Gulf exchange for a host of marine life including some of the most economically and ecologically important species that occur in the area. This area is also the most productive and important spawning aggregation site for the most ecologically and economically important fishes in the region (Red drum, Spotted Seatrout, Sheepshead, Black Drum, etc.). Interactions that occur in tidal inlets cannot be compromised, or we risk losing the sustainability that supports multi-billion dollar fisheries (e.g., finfish, crab, and shrimp), livelihoods for residents, and recreation (e.g., fishing) for many local residents and visitors to the region.

Altering the water chemistry and flow through these areas affects fish and other marine species that depend on access through these inlets for survival and reproduction. As described by Brad Erisman, Ph.D., Assistant Professor of Fisheries Ecology at The University of Texas Marine Science Institute:

The Aransas Pass tidal inlet is the most important multi-species, spawning site for the most economically valuable sportfishes in the region, which includes red drum (*Sciaenops ocellatus*), spotted seatrout (*Cynoscion nebulosus*), sheepshead (*Archosargus probatocephalus*), and black drum (*Pogonias cromis*). In addition, the tidal inlet is the only migratory pathway for the offshore and inshore spawning migration of the local population of southern flounder (*Paralichthys lethostigma*), which is an important recreational and commercial species. Each of these fish species forms spawning aggregations, which are predictable large gatherings of fish at specific times and locations solely for the purposes of spawning. Moreover, the Aransas Pass holds the largest and most productive spawning aggregations for these species in the entire region. Collectively, this site houses large spawning aggregations of different species at different times of the year (e.g. sheepshead in winter and spring; seatrout in spring and summer; red drum in the fall). Therefore, the productivity and resilience of local populations of these sportfishes and the fisheries they support are directly linked to and dependent upon the reproductive activity that successfully occurs at this inlet. Moreover, any disturbances that occur in this area (e.g. increased salinity, reduced oxygen levels, turbidity, noise, habitat alteration) have the potential to reduce spawning activity and reproductive output of these fishes. Given the disproportional number of fish that spawn in this area compared to adjacent areas and the fact that it is the only site for a large expanse of coastline that connects the Gulf to the bays, this could result in a measurable, negative impact on the size and productivity of the regional populations of these

fishes. In turn, such a scenario could directly impact local fisheries by reducing the number of fish in the region that are available to be harvested.<sup>41</sup>

Disturbances caused by development activities (e.g., channel deepening, widening, dredging, desalination, pollution, VLCCs, oil spills) can reduce spawning and productivity through reduced spawning activity, reduced egg production, displacement of fish away from the area, and other non-fatal or fatal effects. Given that fisheries stocks and productivity rely on the production and recruitment of new fish into the population, reducing spawning activities in these crucial sites can directly reduce regional fish populations and fisheries production.

Therefore, the USACE must evaluate the potential effects of the proposed Projects on the Aransas Pass inlet and how that may negatively impact migration patterns, salinity, water quality, and marine habitats as well as the Projects’ potential impact on the Essential Fish Habitat and whether the Applicant has complied with applicable regulations under the MSFCA.

**X. Endangered Species**

In the public notice, USACE acknowledged that threatened and/or endangered species or their critical habitat may be affected by the proposed work. Furthermore, the USFWS noted that consultation under section 7(a)(2) of the Endangered Species Act (“*ESA*”) is required to evaluate the impacts of the dredging as well as the options for placement of dredged materials.

Specifically, the following species are listed by USFWS as endangered or threatened under the ESA for Nueces and San Patricio Counties:

Attwater’s Prairie Chicken	Gulf Coast Jaguarundi	Kemp’s Ridley Sea Turtle*
Black Rail	Ocelot	Leatherback Sea Turtle*
Golden-Cheeked Warbler	Humpback Whale*	Loggerhead Sea Turtle*
Northern Aplomado Falcon	West Indian Manatee	Black Lace Cactus
Piping Plover	Golden Orb	Slender Rush-Pea
Red Knot	Green Sea Turtle*	South Texas Ambrosia
Whooping Crane	Hawksbill Sea Turtle*	

\* These species are listed by both USFWS and NMFS.

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<sup>41</sup> Brad Erisman, Ph.D., *Statement Regarding the Ecological and Socioeconomic Value of the Aransas Pass Tidal Inlet*, p. 2, August 29, 2019.

The following species are listed by NMFS:

Oceanic Whitetip Shark	Gulf Of Mexico Bryde's Whale
Giant Manta Ray	Lobed Star Coral
Fin Whale	Mountainous Star Coral
Sei Whale	Boulder Star Coral
Sperm Whale	Elkhorn Coral

The following species, which are not otherwise already federally-listed, are listed by TPWD:

Black-Spotted Newt	Sooty Tern	Southern Yellow Bat
Sheep Frog	Swallow-Tailed Kite	White-Nosed Coati
South Texas Siren	Tropical Parula	Texas Horned Lizard
Bald Eagle	White-Faced Ibis	Texas Indigo Snake
Botteri's Sparrow	White-Tailed Hawk	Texas Scarlet Snake
Reddish Egret	Wood Stork	Texas Tortoise
Rose-Throated Becard	Opossum Pipefish	

The proposed Pipeline Project, along with the Channel Deepening and Terminal Projects, will impact two ESA federally-designated critical habitat units, one for piping plovers and the other for loggerhead sea turtles. This impact is in addition to proposed impacts to habitat occupied by the piping plover, Red Knot, West Indian manatee, green sea turtle, hawksbill sea turtle, Kemp's Ridley sea turtle, leatherback sea turtle, and loggerhead sea turtle that are not designated as critical. Though not mentioned in the Application, one of the proposed disposal sites is near Charlie's Pasture, where breeding pairs of whooping cranes were observed this year for the first time in several decades.<sup>42</sup>

Not only does the USACE need to undergo a Section 7 Consultation with USFWS to determine the potential impacts on federally-listed endangered species, the USACE must also evaluate the impact of the proposed Projects on one of the region's most unique and important marine ecosystems. As noted above, the location of the proposed Projects will directly affect the Aransas Pass inlet and the adjacent Bay Systems, which provide a mosaic of various habitat types unlike anywhere else in Texas, including seagrass beds, mud flats, oyster reefs, and shoreline vegetation that are used as nurseries, feeding grounds, and nesting sites for a wide variety of wildlife species.

TPWD has also identified numerous concerns with the proposed Projects, including the negative impacts on seagrass beds, marshes, and tidal flats in Redfish Bay that provide habitat for

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<sup>42</sup> See *Whooping Cranes Seen in Port Aransas Preserve*, Port Aransas South Jetty, Dec. 31, 2018, available at <https://www.portasouthjetty.com/articles/whooping-cranes-seen-in-port-aransas-preserve/>.

endangered species; recreational fisheries; and escape and foraging habitat for numerous marine and avian species.<sup>43</sup>

Therefore, the USACE must fully evaluate the impact of the Terminal Project, as well as the cumulative impact of all three Projects, on marine and terrestrial federally-listed endangered species, including the hawksbill sea turtle, green sea turtle, Kemp's Ridley sea turtle, leatherback sea turtle, loggerhead sea turtle, whooping crane, piping plover, and red knot. In addition, the USACE should evaluate the potential impact on this unique ecosystem that is the home for so many other species that are not otherwise protected.

## **XI. Water Quality**

The proposed Pipeline Project will propel tons of sediment into the inlet and adjacent Bay Systems during the dredging process and result in dredging and subsequent discharge of 5.6 million cubic yards of clay and sand into beneficial use sites or authorized placement areas.

The public notice indicates that sediment suspension will be avoided by use of turbidity curtains. However, there is no indication that the Applicant or the USACE has evaluated the actual impact of the dredging operations on water quality. Applicant has not provided any quantitative analysis of the amount of sediment that will be expelled into the Redfish Bay, the surrounding Bays Systems, or Aransas Pass inlet or the potential effects of these discharges. The public notice provides no information about the turbidity created by the dredging process itself.

In addition to the dredging for the Pipeline Project, the related Channel Deepening Project will result in the dredging and subsequent discharge of 17.1 million cubic yards of clay and 29.2 million cubic yards of sand. The Channel Deepening application also fails to address the impacts of the dredging operations on water quality. The Terminal Project will result in the dredging of an additional 6.5 million cubic yards of soil and silt. Finally, the movement of VLCCs by tugboat to two different terminals (the Pipeline Project terminal and the Port's Terminal Project) will expel sediment into the CCSC each and every time these ships move to and from their berths. The resulting sediment will be redeposited in sea grass beds, reduce the amount of sunlight absorbed by the grasses, and significantly diminish water quality. The USACE must require the Applicant to provide a quantitative analysis and put in place specific permit conditions that address this issue.

In its comments on the previous version of the Application, the EPA stated that it is unclear whether the information provided by the Applicant "will sufficiently enable the Corps to make a legally defensible permit decision in regard to compliance with the [EPA's 404(b)(1) Guidelines for the Specification of Disposal Sites for Dredged or Fill Material]."<sup>44</sup> The EPA's comments go on to note that under the Disposal Site Guidelines,

"no discharge of dredged or fill material may be permitted by the Corps if: (1) a practicable alternative exists that is less damaging to the aquatic environment so long as that alternative does not have other significant adverse environmental consequences or (2) the nation's waters would be significantly degraded. Under the Guidelines, a project must incorporate all appropriate and practicable measures to

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<sup>43</sup> TPWD Comment Letter regarding Terminal Project, at pp. 1-5.

<sup>44</sup> EPA Comment Letter, at p. 1.

first avoid impacts to wetlands, streams, and other aquatic resources and then minimize unavoidable impacts; after avoidance and minimization measures have been applied, the project must include appropriate and practicable compensatory mitigation for the remaining unavoidable impacts.<sup>45</sup>

The EPA concludes that it does not appear that compliance with the requirements of Section 230.10(c) of the Disposal Site Guidelines has been clearly demonstrated. Furthermore, the EPA states that the information provided by the Applicant “does not appear to adequately reflect consideration of all potential direct, secondary, and cumulative impacts to these functions and values,” as required under Section 230.10(c) of the Disposal Site Guidelines.

We echo the comments made by EPA. The USACE must fully evaluate the whether the Applicant has met the legal standards required under EPA’s Disposal Site Guidelines.

On top of the discharge of clay and sand directly into Redfish Bay and the surrounding Bay Systems during the dredging process and the placement of the dredged materials onto nearby shorelines and wetland areas in connection with the Port’s overall Harbor Island Redevelopment Plan, the Port has applied for a wastewater discharge permit from the TCEQ, which would allow it to dump up to 95.6 million gallons per day of concentrated salt water with a maximum total dissolved salt content of 77,460 mg/L directly into Corpus Christi Bay. The discharge of this amount of concentrated salt water, along with the significant change in depth of the Aransas Pass inlet, will undoubtedly affect hydrodynamics of the connection between the Bay Systems and the Gulf of Mexico, thereby directly altering the salinity within the bays.

Therefore, the USACE must evaluate the extent to which the proposed Pipeline Project dredging and discharge of 5.6 million cubic yards of dredged material, along with the Channel Deepening Project dredging and discharge of 57.1 million cubic yards of sand and clay onto the shorelines and authorized placement areas over the next ten years, and the discharge of sediment that will be driven into the Aransas Pass inlet and adjacent Bay Systems during the dredging process, along with the discharge of 96.5 million gallons per day of highly saline wastewater from the proposed desalination plant, will negatively impact water quality in these areas. Finally, the USACE must evaluate not only the impacts of increased salinity due to the discharge of concentrated salt water from the desalination plant but must evaluate, on a quantitative basis, the likely effects of the proposed channel enlargement on exchanges of water, salt, organic matter, nutrients, sediment, and organisms between the Bay Systems and the nearshore Gulf of Mexico.

## **XII. Safety**

The USACE review must also evaluate how the Pipeline Project, the Channel Deepening Project, and the Terminal Project may affect loss of human life, injury to humans, and destruction of homes, boats, marinas, and other infrastructure. Changes to channel depth can cause amplified tides and worsened storm surge, increasing the flooding from hurricanes. In a 2020 study by Ramin Familkhalili, Stefan Talke, and Davis Jay about the effect of channel deepening on tides and storm

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<sup>45</sup> *Id.*

surge, the authors concluded that “Our results show that storm surge generally gets larger when channels are dredged and deepened.”<sup>46</sup>

Not only are storm surges likely to increase if the CCSC is deepened as proposed by the Channel Deepening Project, but the negative impacts of VLCC wake damage on recreational vessels, marinas, jetties, and other infrastructure must also be evaluated. Such impacts are known to be expected and will be the direct result of the Projects.

### **XIII. Economics and Recreation**

Ecotourism and recreational activities are essential to the economy of Port Aransas, Corpus Christi, and the surrounding communities. The USACE review must closely analyze the Projects’ impact on recreation near the proposed Pipeline Project as well as the VLCC routes and associated wake effects.

Impacted activities will likely include recreational and sport fishing, surfing, bird-watching, biking, canoeing, kayaking, and boating. The VLCCs will pass through the Port Aransas inlet and along the CCSC.

The Projects and VLCC movement will impact recreational activities near Harbor Island and along VLCC routes, but will also impact recreational activities throughout the Bay Systems and into the Gulf of Mexico. These impacts must be discussed with reference to fluctuating seasonal use, focusing on those times when recreational use is at its highest. The USACE must also evaluate the impacts on nearby parks and wildlife centers such as Conn Brown Harbor Point Park, Port Aransas Nature Preserve, Aransas Pass Loop, Mustang Island Loop, Mustang Island State Park, Aransas National Wildlife Refuge, San Jose Island, which is known to be occupied by numerous ESA-listed threatened and endangered sea turtle and bird species, the RBSSA, and the MANERR.

The USACE must also specifically look at the negative impacts that the Projects will have on the recreational fishing industry in the region. The importance of the shallow water resources of RBSSA to recreational fisheries in Redfish Bay is detailed in recent angler survey data collected from 2013 to 2017. Southern Redfish Bay represents only about 7% of the areal extent of the Corpus Christi Bay Ecosystem, yet survey data indicate that this small area accounted for 18% of the angling trips taken by boat and 21% of the angler hours (time anglers spent fishing) throughout the Corpus Christi Bay Ecosystem. These survey data also indicate that southern Redfish Bay accounted for 37% of spotted seatrout, 31% of red drum, 23% of southern flounder, and 12% of black drum landed throughout the Corpus Christi Bay Ecosystem.<sup>47</sup>

Recent studies have shown that all the redfish in an estuary migrate to a single location to spawn. The only spawning grounds in the area actually occur in and around the Aransas Pass inlet. Thus, it supports the redfish population in Aransas, Redfish Bay, Corpus Christi, and the other

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<sup>46</sup> *Tide-Storm Surge Interactions in Highly Altered Estuaries: How Channel Deepening Increases Surge Vulnerability*, R. Famikhali, S.A. Talke, and D.A. Jay, *Journal of Geophysical Research: Oceans*, Volume 125, Issue 4, April 2020.

<sup>47</sup> TPWD Letter from Rebecca Hensley to Richard G. Leonhard, Project Consulting Services, Inc.re: Axis midstream Redfish to Harbor Island Pipelines, at p. 2., December 6, 2018.

surrounding Bay Systems. Impacting this area will have significant adverse effects on the entire redfish population in the area and its fishery.

Negative impacts to the environment of the Bay Systems may have devastating impacts on the local economy and must be quantitatively analyzed by the USACE.

#### **XIV. Conclusion**

The Pipeline, Terminal, and Channel Deepening Projects are clearly interrelated and dependent upon one another. That much is clear from the original applications and the USACE's previous determinations. The USACE should not allow the Applicants to submit these applications as separate and independent projects. Doing so would allow the Applicant to circumvent significant aspects of NEPA, contravene U.S. Supreme Court precedent, and reverse previous USACE determinations issued for this specific Project without any legal justification for doing so.

Regardless of the single and complete project determination, the cumulative effects of all three Projects must be evaluated as part of the USACE's evaluation in this matter. As noted in detail above, the Projects will have severe environmental consequences for the Port Aransas inlet, the Aransas Bay, Corpus Christi Bay and Redfish Bay. These Projects also will have direct adverse effects on major industries in the region such as sport fishing and tourism, with significant resulting economic impacts.

There are other viable options, most notably the single-point mooring and offshore platform options and avoidance of Redfish Bay, that would allow Applicant to achieve its goals without destroying one of Texas' most unique and beloved ecosystems.

Thank you for your consideration of these comments.

Sincerely,



Benjamin Rhem – Jackson Walker LLP

Craig Bennett – Jackson Walker LLP

Rick Lowerre – Frederick, Perales, Allmon & Rockwell, PC

David Frederick – Frederick, Perales, Allmon & Rockwell, PC

**Attorneys for Port Aransas Conservancy**

# **Attachment A**



**SQ Environmental, LLC**

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Austin, TX 78767  
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512-656-9445

23 January 2020

Mr. Artemis Harbert  
Railroad Commission of Texas  
Environmental Permits and Support  
P.O. Box 12967  
Austin, Texas 78711

Via: E-Mail: [Artemis.Harbert@rrc.texas.gov](mailto:Artemis.Harbert@rrc.texas.gov)

**RE: Work Plan for Soil Relocation  
Harbor Island Station, Highway 361, Nueces County, Texas  
SQE PN: 1089.006.001**

Dear Mr. Harbert:

SQ Environmental, LLC (SQE) prepared this Work Plan for the Railroad Commission of Texas (RRC) on behalf of the Port of Corpus Christi Authority (PCCA) to provide the planned process for soil relocation activities at the PCCA property located north of Highway 361 on Harbor Island in Nueces County, Texas. The approximate location of the Harbor Island property is provided on Figure 1. This Work Plan summarizes the previously completed site investigation and remediation work for the property, and the plan for relocation of soil from the southern portion of the property to a designated area on the north side of the property as part of the planned site development activities.

## **BACKGROUND**

The former Harbor Island Station was operated by the ExxonMobil Pipeline Company (EMPC) as a terminal for the storage of crude oil until 1993. Between 1994 and 2003, several site investigations were conducted of the former EMPC portion of the property, and soil was remediated through removal and landfarming methods. According to a 2012 Remediation Summary Report completed by Conestoga Rovers & Associates (CRA), a total of approximately 804,731 cubic yards (CY) was remediated by EMPC from 1994 to 2009, and a total of 40,663 CY were remediated by the PCCA from 2009 to 2010. The areas where soil initially containing petroleum hydrocarbons above cleanup levels and which were remediated are outlined in light blue on the attached Figure 2.

Due to the presence of buildings and/or other obstructions, following completion of the remediation activities there were six small areas where soil remained with reported Total Petroleum Hydrocarbon (TPH) concentrations above 10,000 mg/kg, which is the Texas RRC Statewide Rule 91 Protection Limit for the soil to groundwater pathway. Each area was deed recorded due to the presence of soil with TPH above 10,000 mg/kg, and certain Restrictive Covenants were placed on the six areas. The RRC provided approval of these Restrictive Covenants in a letter dated 5 January 2015, which stated that no further action was required for the site. Figure 2 shows these six deed recordation areas (outlined in yellow) within the larger Harbor Island Station property. Besides the remediation activities, there has been no other industrial use of the property since the terminal operation ceased in the mid-1990s. The property was used as a dock and waiting area for a commercial cruise ship.

PCCA is now considering options to return the property to beneficial use, including a re-evaluation of the Restrictive Covenants that were placed on the six areas in 2014. As part of this effort, soil assessment



activities were conducted in September 2019 to evaluate the current conditions of the soil within these deed-restricted areas and provide information to relocate any soils exceeding levels which would allow the planned redevelopment activities to move forward. A total of twelve historical samples were identified in the six deed recordation areas which had TPH concentrations above the 10,000 mg/kg limit. These twelve locations were resampled in September 2019 to evaluate current soil conditions. Based on the soil sampling that was performed in September 2019, of the twelve locations recently investigated, only three had TPH remaining at concentrations above 10,000 mg/kg. These three locations are shown with red dots on Figure 2, and are located in the areas labeled TT-2A (north of the former building), TT-1B, and SWW-2A. The work that was performed is documented in the SQE Soil Assessment Letter Report dated 16 October 2019, a copy of which is included as Attachment 1 to this letter. As documented in the Soil Assessment Report, the elevated TPH in soil was delineated with additional sampling at each of these three locations. None of the TPH concentrations reported for soil samples from the delineation borings exceeded 10,000 mg/kg, indicating that the soil with TPH remaining above 10,000 mg/kg is very limited in extent.

As discussed in the meeting at the RRC office on 1 October 2019, PCCA has identified a tenant and is making plans for redevelopment of the property. The PCCA plans to excavate the soil from the three areas discussed above with concentrations above 10,000 mg/kg, and relocate the soil to other “upland” areas of the property. The work will be conducted to support the redevelopment of the property. The three areas planned for removal and the proposed relocation area are shown on Figure 3. Following completion of the soil relocation confirmation samples will be collected to verify that the remaining soil is below 10,000 mg/kg TPH.

Based on the recent sampling of three of the areas covered by the Restrictive Covenants which indicate TPH remaining above 10,000 mg/kg is no longer present, and planned relocation of soil from the three areas where TPH remaining above 10,000 mg/kg was identified, the Restrictive Covenants are no longer needed. A summary of the planned activities for soil relocation is provided below.

### **WORK PLAN SUMMARY**

As discussed above, the PCCA plans to relocate soil from the three areas with TPH remaining above 10,000 mg/kg. These are shown with red dots on Figure 3, and include a total of approximately 300 cubic yards (CY) of soil. These soils will be placed in the area shown on Figure 3 labeled “Relocation Area for Soil Containing TPH Above 10,000 mg/kg”.

The soil from the three areas identified with TPH above 10,000 mg/kg (TT-2A, TT-1B, and SWW-2A) will be removed to a depth of 10 ft bgs (approximate depth to the top of the saturated zone). Following removal, confirmation samples will be collected from the side walls of each excavation area. The confirmation samples will be analyzed for TPH by Method TX 1005. As mentioned, the soil with TPH above 10,000 mg/kg will be relocated to the approximate area shown on Figure 3 (outlined in yellow), although the specific location for these soils may be modified based on site planning and conditions. The soils with TPH above 10,000 mg/kg will be spread over an approximate one-acre area, to an approximate depth of 3 inches. This is consistent with the RRC Landfarm Permit requirements. A Form P-5 for this activity has been filed with the RRC.

Once the soil is spread across the one-acre area, a four-point composite soil sample will be collected from the upper 3 inches (the relocated soil). The four aliquots will be collected from the four quadrants of the one-acre area. The composite sample will be submitted to the laboratory for analysis of TPH by Method TX 1005.



It should be noted that the entire construction project will require a Texas Pollution Discharge Eliminated System (TPDES) permit. This permit will include the actions that will be taking as part of the overall project to control stormwater and meet the TPDES construction requirements. Specific to the relocation of soils with TPH in excess of 10,000 mg/kg, special precautions will be taken. This will include construction of berms to prevent stormwater run-on, and control run-off both for the excavation areas and the one-acre relocation area. The berms will be designed to contain stormwater directly falling on the one-acre area. In addition, hay bales and/or hay booms will be positioned at drainage pathways from the one-acre area to catch sediment and any oils which are potentially entrained in run-off during flooding events. These controls will be maintained until the concentrations of TPH in the one-acre area drop below 10,000 mg/kg. As noted above, these special precautions are in addition to the Best Management Practices (BMPs) which may be implemented as part of the overall construction project.

On completion of this work, a report will be prepared for submittal to the RRC. This will include documentation of the work performed, and will provide coordinates for the one-acre area. This report will also include the results of the confirmation samples and the total volume of soil that was relocated.

### **OPTION FOR SOIL DISPOSAL**

As discussed above, the PCCA plans to relocate soil from the three identified areas with TPH greater than 10,000 mg/kg. These are shown with red dots on Figure 3, and include a total of approximately 300 cubic yards (CY) of soil. As an alternative, the soils with TPH above 10,000 mg/kg may be excavated and transported off-site for disposal at a landfill that is permitted to accept RRC waste. If this option is selected, no Form P-5 would be needed, and RRC would be notified that off-site disposal is being planned. All of the actions described in this Plan would be implemented, except that instead of placing the soil with TPH above 10,000 mg/kg in the one-acre area, it would be hauled to a permitted facility.

If this option were selected by PCCA, on completion of the off-site disposal, a report documenting the work performed and providing copies of the manifests or trip tickets will be provided to the RRC.

### **CONCLUSIONS AND CLOSING**

As discussed above, the PCCA is planning to conduct soil relocation activities for the former Harbor Island Station property beginning in March 2020. Following relocation of the soil with TPH above 10,000 mg/kg and collection of samples, a Final Report will be submitted to document the work. As noted above, three out of the six areas which were originally deed restricted now have TPH concentrations below 10,000 mg/kg. With the relocation of the remaining soils with TPH above 10,000 mg/kg, the Restrictive Covenants are no longer needed. Please let us know if you need any additional information regarding this planned project.



If you have any questions or would like to discuss this further, please let us know. Sam may be reached at 512-574-1199 or [S.Enis@SQEnv.com](mailto:S.Enis@SQEnv.com), and Susan may be reached at 512-656-9445 or [s.litherland@sqenv.com](mailto:s.litherland@sqenv.com).

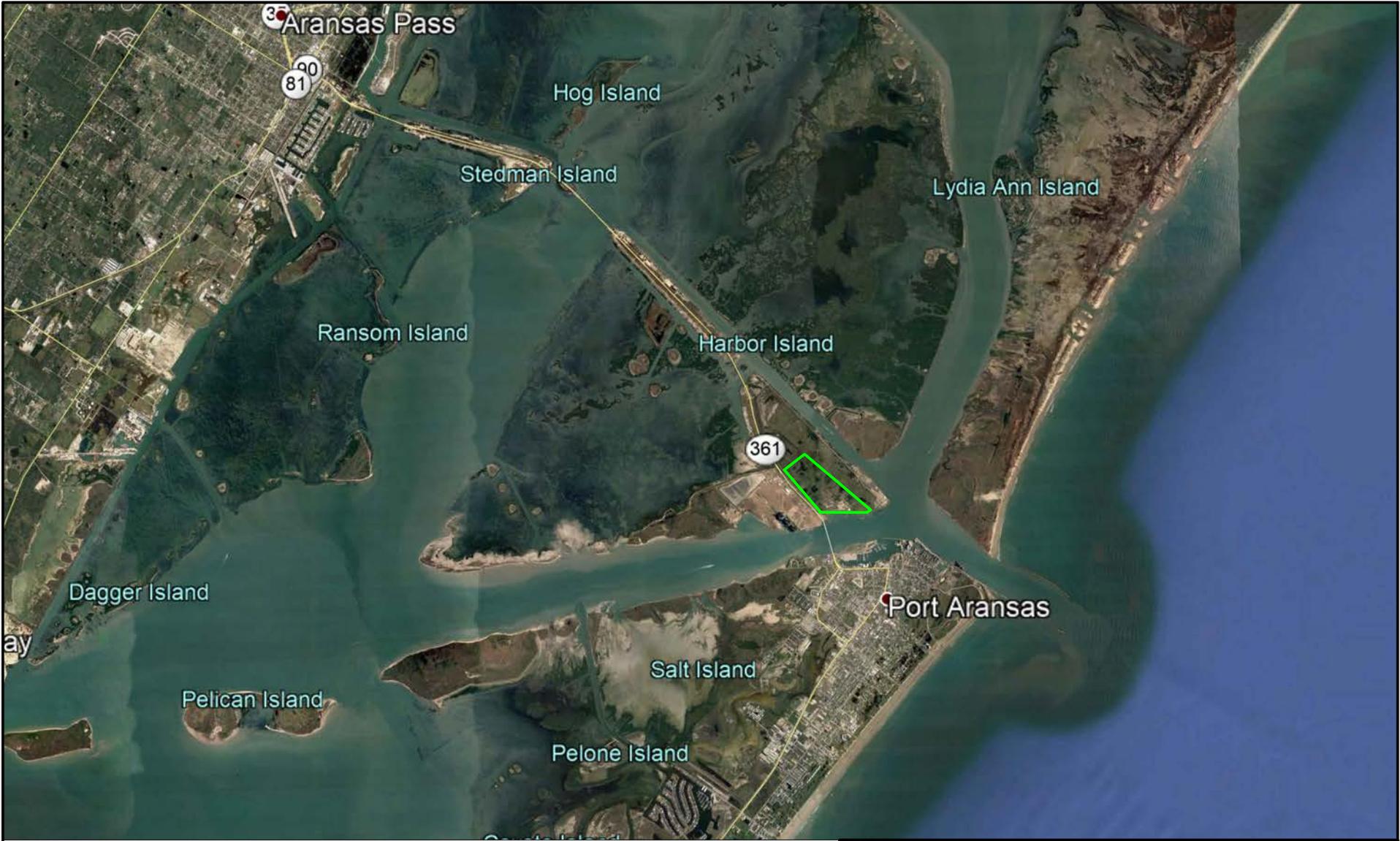
Sincerely,  
**SQ Environmental, LLC**

A handwritten signature in black ink, appearing to read 'Sam Enis'.

Sam Enis, P.G.  
Project Manager

A handwritten signature in purple ink, appearing to read 'Susan Litherland'.

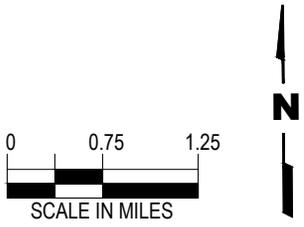
Susan Litherland, P.E.  
Principal



**LEGEND**

 PROPERTY BOUNDARY (APPROXIMATE)

IMAGERY SOURCE: GOOGLE EARTH PRO, 2018



**SQ Environmental, LLC**

**FIGURE 1**

**SITE LOCATION MAP**  
 FORMER HARBOR ISLAND STATION  
 HIGHWAY 361  
 ARANSAS PASS, TX 78335

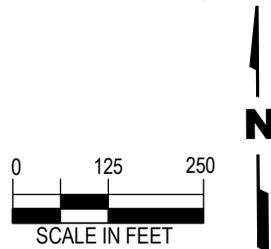
SCALE: 1 IN = 1.25 MI	DATE: SEPT 2019	PN: 1089.006.001
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**LEGEND**

- PCCA FORMER EXXON/MOBIL AREA PROPERTY BOUNDARY
- TT-1A DEED RECORDED AREAS
- TT-1 HISTORICAL REMEDIATION AREAS
- AREA FOR SOIL REMOVAL  
(WITH TPH CONCENTRATION ABOVE 10,000 MG/KG)

IMAGERY SOURCE: GOOGLE EARTH PRO, 8/29/2017



**SQ Environmental, LLC**

SCALE: 1 IN = 250 FT

**FIGURE 2**

**DEED RECORDED AREAS & HISTORICAL REMEDIATION AREAS**

FORMER HARBOR ISLAND STATION  
HIGHWAY 361  
ARANSAS PASS, TEXAS 78373

DATE: JAN 2020

PN: 1089.006.001



<p><b>LEGEND</b></p> <p><span style="color: green;">—</span> PCCA FORMER EXXON/MOBIL AREA PROPERTY BOUNDARY</p> <p><span style="color: red;">●</span> AREA FOR SOIL REMOVAL (WITH TPH CONCENTRATION ABOVE 10,000 MG/KG)</p>		<p>IMAGERY SOURCE: GOOGLE EARTH PRO, 8/29/2017</p>	
<p><b>NOTES:</b></p> <p>1. SOIL RELOCATION AREAS ARE APPROXIMATE AND MAY CHANGE PENDING SITE PLANS.</p>		<p style="text-align: center;">0      450      900</p> <p style="text-align: center;">SCALE IN FEET</p>	
<p style="text-align: center;"><b>N</b></p>		<div style="text-align: center;">  <p><b>SQ Environmental, LLC</b></p> </div>	
<p style="text-align: center;"><b>SCALE:</b> 1 IN = 900 FT</p>		<p style="text-align: center;"><b>FIGURE 3</b></p> <p style="text-align: center;"><b>PROPERTY LAYOUT MAP</b></p> <p style="text-align: center;">FORMER HARBOR ISLAND STATION HIGHWAY 361 ARANSAS PASS, TEXAS 78373</p>	
<p><b>DATE:</b> JAN 2020</p>		<p><b>PN:</b> 1089.006.001</p>	

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**ATTACHMENT 1**

**SQE SOIL ASSESSMENT LETTER REPORT**

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**SQ Environmental, LLC**

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Austin, TX 78767  
www.SQEnv.com  
(512) 900-7731

16 October 2019

Ms. Ramona Josefczyk  
Port of Corpus Christi Authority  
222 Power Street  
Corpus Christi, TX

Via: E-Mail: [rjosefczyk@pocca.com](mailto:rjosefczyk@pocca.com)

**RE: Letter Report – Soil Assessment  
Former Harbor Island Station, Highway 361, Aransas Pass, Nueces County, Texas  
SQE PN: 1089.006.001**

Dear Ms. Josefczyk:

SQ Environmental, LLC (SQE) prepared this Letter Report for the Port of Corpus Christi Authority (PCCA) to summarize the soil investigation activities which were recently completed at the former Harbor Island Station located north of Highway 361 in Aransas Pass, Nueces County, Texas. The approximate location of the Harbor Island property is provided on Figure 1. This Letter Report includes a description of the soil assessment activities completed at the property in September 2019, and a discussion of the sample results.

**BACKGROUND**

The former Harbor Island Station was operated by the ExxonMobil Pipeline Company (EMPC) as a terminal for the storage of crude oil until 1993. The PCCA acquired the land in 1995. Between 1994 and 2003, several site investigations were conducted of the property, and soil was remediated through removal and landfarming methods. According to the 2012 Remediation Summary Report completed by Conestoga Rovers & Associates (CRA), a total of approximately 804,731 cubic yards (CY) was remediated by EMPC from 1994 to 2009, and a total of 40,663 CY were remediated by the PCCA from 2009 to 2010.

Due to the presence of buildings and/or other obstructions, there were six small areas where soil remained with reported Total Petroleum Hydrocarbon (TPH) concentrations above 10,000 mg/kg, which is the Texas Railroad Commission (RRC) Statewide Rule 91 Protection Limit for the soil to groundwater pathway. These areas were deed recorded due to the presence of soil with TPH above 10,000 mg/kg, and certain Restrictive Covenants were placed on the six areas. Figure 2A shows these six areas within the larger Harbor Island Station property. Besides the remediation activities, there has been no other use of the property since the terminal operation ceased in the mid-1990s.

PCCA is now considering options to return the property to beneficial use, including a re-evaluation of the Restrictive Covenants that were placed on the six areas. Soil assessment activities were conducted to evaluate the current conditions of the soil within these deed restricted areas and provide information that may be needed to either relocate or remove any soils exceeding levels which would allow the planned redevelopment activities to move forward. A summary of the soil investigation activities is provided below.



## SOIL INVESTIGATION ACTIVITIES

Following completion of the excavation and remediation activities conducted in 1994 through 2010, soil samples were collected. Based on the post-excavation sample results, 12 soil sample locations were identified with concentrations of TPH above the RRC Protection Limit of 10,000 mg/kg. The goal of the 2019 soil assessment activities was to investigate the current concentration of TPH at each of these locations, and to delineate any areas where TPH in the soil remained above 10,000 mg/kg.

Prior to the investigation activities, a site-specific health and safety plan was developed, and a one-call utility locate was completed. SQE coordinated with participating utility companies, and met with a PCCA representative onsite on 5 September 2019, to clear the soil boring locations for potential subsurface pipeline conflicts. SQE mobilized to the property with a drilling contractor, Tolunay Wong Engineers (TWE), on 6 September 2019 to conduct the soil investigation. The soil sampling was completed on 11 September 2019. A representative from the RRC (Casey Mibb) was onsite for the sampling activities. A total of 20 soil borings were completed by direct push drilling methods to total depths ranging from 10 to 12 feet (ft) below ground surface (bgs). The soil borings were continuously logged and screened with a photoionization detector (PID). Global Positioning System (GPS) coordinates for each boring location were recorded using a GPS Trimble unit. The location of each soil boring and deed recordation tract is provided on Figures 2B and 2C.

At each of the 12 locations where TPH above 10,000 mg/kg had previously been reported, a soil boring was completed, and a soil sample was collected from the same depth as the historical sample with the elevated TPH. The locations of these 12 borings are shown on Figures 2B and 2C (red dots). The 12 soil samples were submitted for laboratory for analysis of TPH by Method TX 1005. Soil boring logs are provided in Attachment 1, and State Reports completed by TWE are provided in Attachment 2. As shown on the logs, the shallow lithology consisted of silty sand and silty clay. The saturated zone was encountered at approximately 8 ft below ground surface (bgs).

Based on the results of the initial sampling activities at the 12 target locations, concentrations of TPH were reported below the RRC Protection Limit of 10,000 mg/kg in all of the soil borings, except for 3 locations: SWW-1A, TT-2A-13, and TT-1B-16. As shown in Table 1, the three soil samples, SWW-1A (6), TT-2A-13 (6), and TT-1B-16 (8), had reported TPH concentrations of 11,000 mg/kg, 25,100 mg/kg, and 58,000 mg/kg, respectively. The value in parenthesis, both in the text of this report and on Table 1 is the sample depth in feet bgs. These three locations are shown on Figures 2B and 2C with a red circle.

Additional soil borings were then completed to delineate TPH concentrations in the area of these three borings. As shown on Figures 2B and 2C, three additional delineation soil borings were completed in the vicinity of borings SWW-1A and TT-1B-16. Two additional delineation soil borings were completed in the area of boring TT-2A-13. The delineation soil borings were completed 5 to 10 ft from the original boring location, and the delineation samples were collected from the same depth as the original sample from that location. Results from the 2019 assessment activities along with samples that had been previously collected from the property (i.e. post-excavation sampling activities collected in 1994 through 2010) were used to complete the delineation. Based on the 2019 assessment activities, TPH was not reported above 10,000 mg/kg in any of the delineation soil samples. A summary of the delineation borings for each of the three locations which had a reported TPH concentration above 10,000 mg/kg is provided below.



Boring	Delineation Soil Borings and Direction
SWW-1A (6)	SWW-1A-B3 (southwest), SWW-1A-B2 (southeast), SWW-1A-B1 (northeast), and SWW-2A (northwest).
TT-2A-13 (6)	TT-2A-B4 (south), TT-2A-B2 (west), <i>SB-18 (west)</i> , <i>TT-2A-Bottom-2 (north)</i> , TT2A-15 (southeast), TT-2A-SLAB (northeast), TT-2A-SB27 (east) and TT-2A-14 (southeast).
TT-1B-16 (8)	TT-1B-16-B3 (southeast), TT-1B-16-B2 (southwest), TT-1B-16-B1 (north), and <i>TT1-15 (east)</i> .

For the delineation soil borings shown above in italics, the results from the previous post-excavation sampling were used. These locations are shown on Figures 2B and 2C with green triangles. A summary of the laboratory analytical data for the 2019 samples is provided on Table 1, and the laboratory reports are included in Attachment 3. The results for the post-remediation soil samples that were used for delineation purposes are shown in Table 2. Figures 3A and 3B provide the TPH results for the three areas with TPH above 10,000 mg/kg, along with the delineation sample results.

**CONCLUSIONS AND RECOMMENDATIONS**

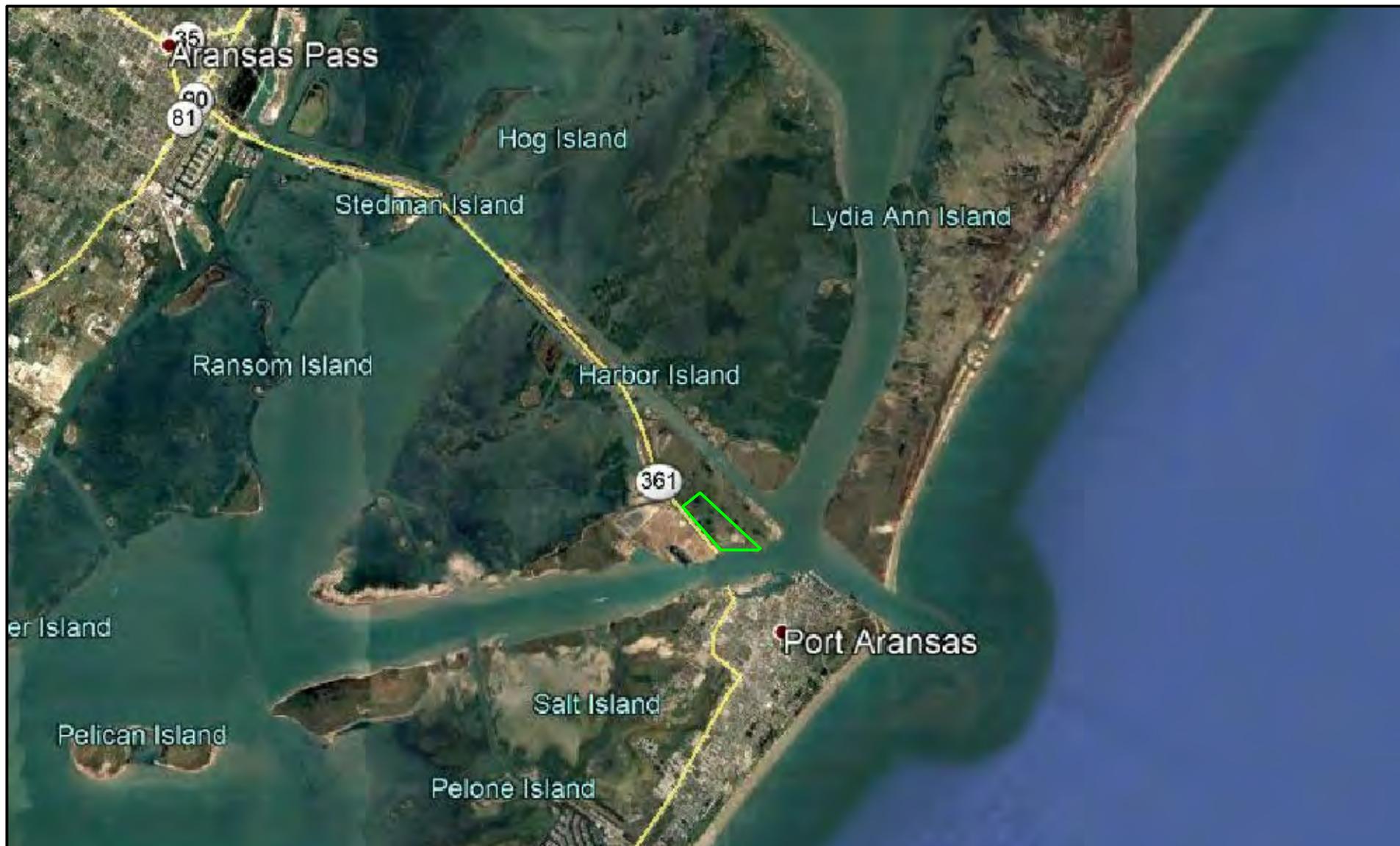
Soil assessment activities were completed on 6 through 11 September 2019 at the former Harbor Island Station north of Highway 361 in Aransas Pass, Texas. The sampling was conducted to evaluate the current concentrations of TPH present in 12 soil boring locations where post-excavation soil samples indicated the presence of soil with TPH above Texas RRC Protection Limit of 10,000 mg/kg. Based on the sampling that was performed, of the 12 locations recently investigated, only three had TPH remaining at concentrations above 10,000 mg/kg. The elevated TPH was delineated at each of these three locations. As discussed above, and shown on Figures 3A and 3B, none of the TPH concentrations reported for soil samples from the delineation borings exceeded 10,000 mg/kg, indicating that the soil with TPH remaining above 10,000 mg/kg is limited in extent. It is recommended that the PCCA excavate the three areas of soil with concentrations above 10,000 mg/kg and land-farm the material to reduce the TPH concentrations to below 10,000 mg/kg. Once these soils are removed, deed restrictions are no longer needed due to elevated TPH concentrations in the soil.

SQE appreciates the opportunity to provide this report. Please let us know if you have any questions or comments. Susan may be reached at 512-656-9445 or [S.Litherland@SQEnv.com](mailto:S.Litherland@SQEnv.com), and Sam may be reached at 512-574-1199 or [S.Enis@SQEnv.com](mailto:S.Enis@SQEnv.com).

Sincerely,  
**SQ Environmental, LLC**

Sam Enis, P.G.  
Project Manager

ATTACHMENTS



LEGEND

 PROPERTY BOUNDARY, APPROXIMATE

IMAGERY SOURCE: GOOGLE EARTH PRO, 2018



SQ Environmental, LLC

SCALE: 1 IN = 2.5 MI

DATE: SEPT 2019

PN: 1089.006.001

**FIGURE 1**

SITE LOCATION MAP  
HARBOR ISLAND STATION  
HIGHWAY 361  
ARANSAS PASS, TX 78335



LEGEND

 DEED RECORDED AREAS

IMAGERY SOURCE: GOOGLE EARTH PRO, 2018



SQ Environmental, LLC

SCALE: 1 IN = 350 ft

DATE: SEPT 2019

PN: 1089.006.001

**FIGURE 2A**

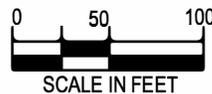
SITE LAYOUT MAP  
HARBOR ISLAND STATION  
HIGHWAY 361  
ARANSAS PASS, TX 78335



**LEGEND**

- INITIAL SOIL BORING
- SAMPLE WITH TPH ABOVE 10,000 MG/KG
- DELINEATION SOIL BORING
- APPROXIMATE BOUNDARY OF TRACT
- ▲ POST EXCAVATION SOIL SAMPLE

NOTE: NUMBER IN PARENTHESES REPRESENTS SAMPLE DEPTH (ft)  
IMAGERY SOURCE: GOOGLE EARTH PRO, 9/13/2019



SQ Environmental, LLC

SCALE: 1 IN = 100 FT

**FIGURE 2B**

**BORING LOCATION MAP**

HARBOR ISLAND STATION  
HIGHWAY 361  
ARANSAS PASS, TX 78335

DATE: SEPTEMBER 2019

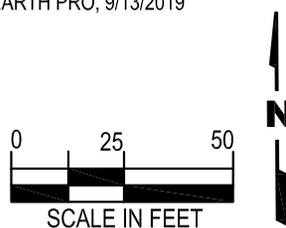
PN: 1089.006.001



**LEGEND**

-  INITIAL SOIL BORING
-  SAMPLE WITH TPH ABOVE 10,000 MG/KG
-  DELINEATION SOIL BORING
-  APPROXIMATE BOUNDARY OF TRACT

NOTE: NUMBER IN PARENTHESES REPRESENTS SAMPLE DEPTH (ft)  
IMAGERY SOURCE: GOOGLE EARTH PRO, 9/13/2019



SQ Environmental, LLC

SCALE: 1 IN = 50 FT

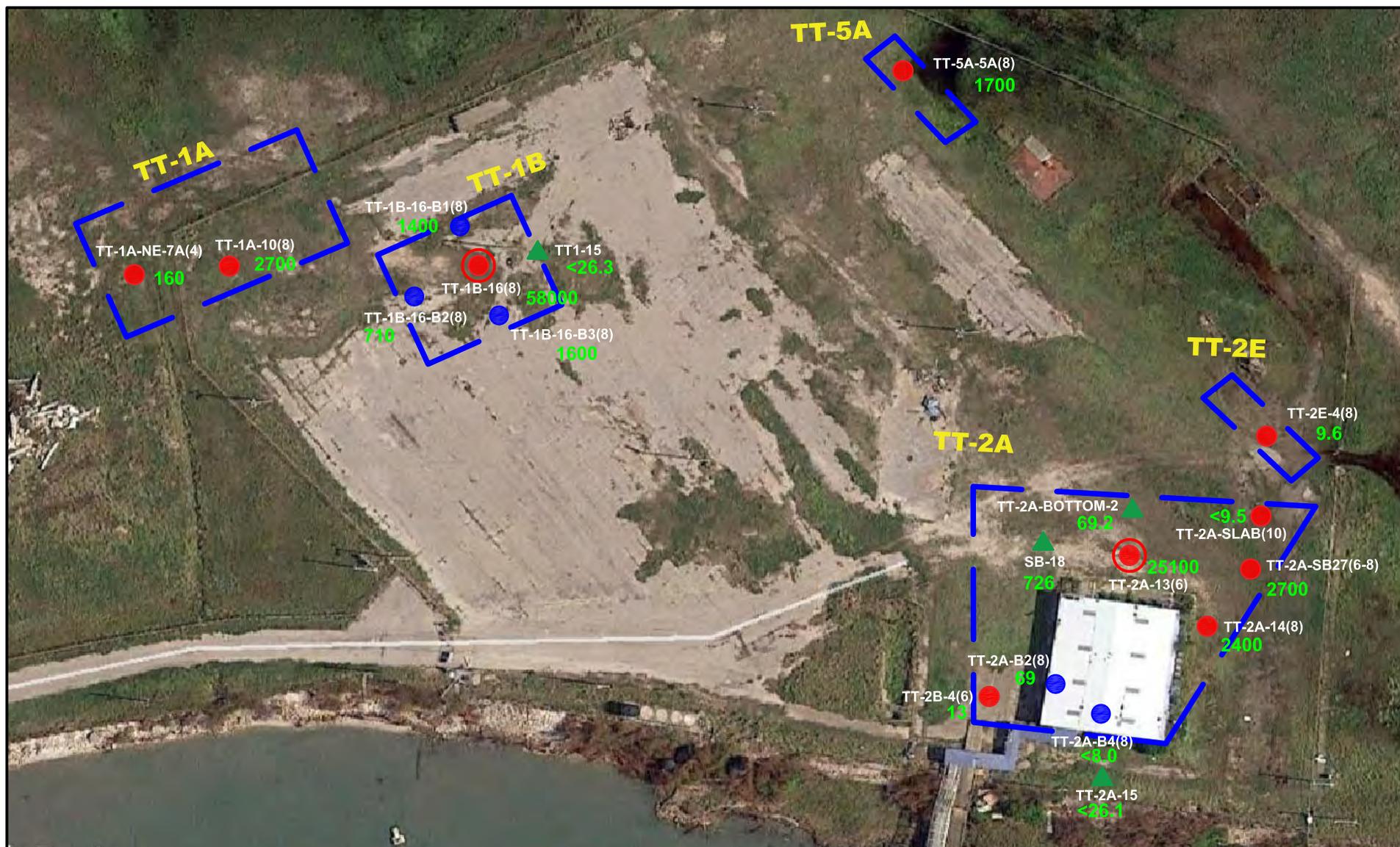
**FIGURE 2C**

**BORING LOCATION MAP**

HARBOR ISLAND STATION  
HIGHWAY 361  
ARANSAS PASS, TX 78335

DATE: SEPTEMBER 2019

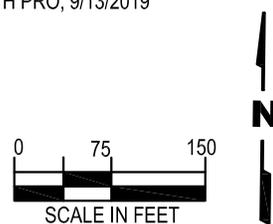
PN: 1089.006.001



LEGEND

- INITIAL SOIL BORING
- SAMPLE WITH TPH ABOVE 10,000 MG/KG
- DELINEATION SOIL BORING
- APPROXIMATE BOUNDARY OF TRACT
- POST EXCAVATION SOIL SAMPLE (2010)
- TPH CONCENTRATION IN MG/KG

NOTE: NUMBER IN PARENTHESES REPRESENTS SAMPLE DEPTH (ft)  
IMAGERY SOURCE: GOOGLE EARTH PRO, 9/13/2019



SQ Environmental, LLC

SCALE: 1 IN = 150 FT

DATE: SEPTEMBER 2019

PN: 1089.006.001

FIGURE 3A

BORING LOCATION MAP

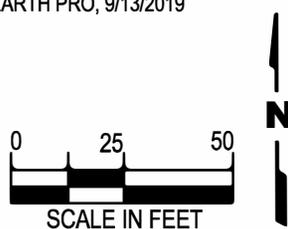
HARBOR ISLAND STATION  
HIGHWAY 361  
ARANSAS PASS, TX 78335



**LEGEND**

- INITIAL SOIL BORING
- SAMPLE WITH TPH ABOVE 10,000 MG/KG
- DELINEATION SOIL BORING
- APPROXIMATE BOUNDARY OF TRACT
- 11000 TPH CONCENTRATION IN MG/KG

NOTE: NUMBER IN PARENTHESES REPRESENTS SAMPLE DEPTH (ft)  
IMAGERY SOURCE: GOOGLE EARTH PRO, 9/13/2019



SQ Environmental, LLC

SCALE: 1 IN = 50 FT

**FIGURE 3B**

**BORING LOCATION MAP**

HARBOR ISLAND STATION  
HIGHWAY 361  
ARANSAS PASS, TX 78335

DATE: SEPTEMBER 2019

PN: 1089.006.001

TABLE 1  
SUMMARY OF SOIL SAMPLE RESULTS  
HARBOR ISLAND STATION  
ARANSAS PASS, TEXAS

	Soil-To-Groundwater Protection Limit <sup>1</sup> mg/kg	Sample ID Lab ID Date Type Units	TT-2A-13(6)	TT-1B-16(8)	TT-2A-14(8)	TT-2A-SB27(6-8)	TT-2A-Slab(10)	TT-5A-5A(8)	TT-1A-10(8)
			HS19090308 9/6/2019 Grab mg/kg	560-82178-2 9/10/2019 Grab mg/kg	560-82178-3 9/10/2019 Grab mg/kg	560-82178-5 9/10/2019 Grab mg/kg	560-82178-7 9/10/2019 Grab mg/kg	560-82178-10 9/10/2019 Grab mg/kg	560-82178-12 9/10/2019 Grab mg/kg
<b>TPH (TX 1005)</b>									
C6-C12	---		4100 J	2300 J	57 J	<94 U	<9.5 U	120 J	<50 U
>C12-C28	---		<b>21000</b>	<b>48000</b>	<b>2100</b>	<b>2300</b>	<9.5 U	<b>1400</b>	<b>2200</b>
>C28-C35	---		<970 U	<b>7900</b>	<b>290</b>	380 J	<9.5 U	160 J	<b>540</b>
Total C6-C35	10,000		<b>25100</b>	<b>58000</b>	<b>2400</b>	<b>2700</b>	<9.5 U	<b>1700</b>	<b>2700</b>

NOTES:

<sup>1</sup> Based on Railroad Commission Soil-To-Groundwater Protection Limits for Delineation and Remediation, based on Statewide Rule 91.

mg/kg - milligram per kilogram.

U - Analyte not detected above the method detection limit (MDL).

J - Estimated concentration above the MDL and below the Reporting Limit (RL).

--- No Protection Limit.

Bold values indicate concentration reported above the MQL.

Shaded yellow values indicate concentration reported above Protection Limit.

TABLE 1  
SUMMARY OF SOIL SAMPLE RESULTS  
HARBOR ISLAND STATION  
ARANSAS PASS, TEXAS

	Soil-To-Groundwater Protection Limit <sup>1</sup> mg/kg	Sample ID Lab ID Date Type Units	TT-1A-NE-7A(4)	SWW-2A(6)	SWW-1A(6)	TT-2E-4(8)	TT-2B-4(6)	TT-1B-16-B2(8)	TT-2A-B4(8)
			560-82178-14	560-82178-15	560-82178-16	560-82178-20	560-82208-10	560-822208-5	560-822208-6
			9/10/2019	9/10/2019	9/10/2019	9/10/2019	9/10/2019	9/11/2019	9/11/2019
			Grab	Grab	Grab	Grab	Grab	Grab	Grab
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
<b>TPH (TX 1005)</b>									
C6-C12	---		<54 U	<8.9 U	<360 U	<9.1 U	<9.4 U	<18 U	<8.0 U
>C12-C28	---		<b>84</b>	<8.9 U	<b>9700</b>	9.6 J	13 J	<b>370</b>	<8.0 U
>C28-C35	---		<b>80</b>	<8.9 U	1500 J	<9.1 U	<9.4 U	<b>340</b>	<8.0 U
Total C6-C35	10,000		<b>160</b>	<8.9 U	<b>11000</b>	9.6 J	13 J	<b>710</b>	<8.0 U

NOTES:

<sup>1</sup> Based on Railroad Commission Soil-To-Groundwater Protection Limits for Delineation and Remediation, based on Statewide Rule 91.

mg/kg - milligram per kilogram.

U - Analyte not detected above the method detection limit (MDL).

J - Estimated concentration above the MDL and below the Reporting Limit (RL).

--- No Protection Limit.

Bold values indicate concentration reported above the MQL.

Shaded yellow values indicate concentration reported above Protection Limit.

**TABLE 1  
SUMMARY OF SOIL SAMPLE RESULTS  
HARBOR ISLAND STATION  
ARANSAS PASS, TEXAS**

	Soil-To-Groundwater Protection Limit <sup>1</sup> mg/kg	Sample ID Lab ID Date Type Units	SWW-1A-B1(6)		TT-2A-B2(8)		TT-1B-16-B3(8)		TT-1B-16-B1(8)		SWW-1A-B2(6)		SWW-1A-B3(6)	
			560-822208-7	U	560-822208-8	U	560-822208-9	U	560-822208-12	U	560-822208-13	U	560-822208-14	U
<b>TPH (TX 1005)</b>														
C6-C12	---		<7.2	U	<8.4	U	<19	U	<35	U	<9.0	U	<8.8	U
>C12-C28	---		<7.2	U	<b>46</b>		<b>920</b>		<b>1200</b>		<9.0	U	<b>150</b>	
>C28-C35	---		<7.2	U	23	J	<b>660</b>		<b>220</b>		<9.0	U	26	J
Total C6-C35	10,000		<7.2	U	<b>69</b>		<b>1600</b>		<b>1400</b>		<9.0	U	<b>180</b>	

**NOTES:**

<sup>1</sup> Based on Railroad Commission Soil-To-Groundwater Protection Limits for Delineation and Remediation, based on Statewide Rule 91.

mg/kg - milligram per kilogram.

U - Analyte not detected above the method detection limit (MDL).

J - Estimated concentration above the MDL and below the Reporting Limit (RL).

--- No Protection Limit.

Bold values indicate concentration reported above the MQL.

Shaded yellow values indicate concentration reported above Protection Limit.

**TABLE 2  
SUMMARY OF SOIL SAMPLE RESULTS  
HARBOR ISLAND STATION  
ARANSAS PASS, TEXAS**

	Soil-To-Groundwater Protection Limit <sup>1</sup>	Sample ID	TT-1-15		TT-2A-BOTTOM-2		SB-18		TT-2A-15	
	mg/kg	Type Units	Grab mg/kg		Grab mg/kg		Grab mg/kg		Grab mg/kg	
<b>TPH (TX 1005)</b>										
Total C6-C35	10,000		<26.3	U	<b>69.2</b>		<b>726</b>		<26.1	U

NOTES:

<sup>1</sup> Based on Railroad Commission Soil-To-Groundwater Protection Limits for Delineation and Remediation, based on Statewide Rule 91.

mg/kg - milligram per kilogram.

U - Analyte not detected above the method detection limit (MDL).

Bold values indicate concentration reported above the MDL.

Samples collected in 2009-2010 following remediation activities.

---

# **ATTACHMENT 1**

## **BORING LOGS**

---



**SQ Environmental, LLC**  
PO Box 1991  
Austin, TX 78767-1991  
(512) 417-4659

# Boring/Well Log

BORING ID: **SWW-1A**

WELL ID: NA

## PROJECT INFORMATION

## DRILLING INFORMATION

PROJECT: Harbor Island  
SITE LOCATION: HWY 361, Aransas Pass, Texas  
JOB NUMBER: 1089.006.001  
PROJECT MANAGER: Sam Enis, P.G.  
LOGGED BY: Kaitlin Johnson  
DATE(S) DRILLED: 9/10/2019

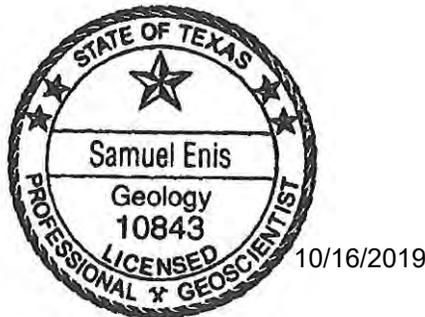
DRILLING COMPANY: Tolunay- Wong Engineers (TWE)  
DRILLING METHOD: Direct Push  
TOTAL DEPTH: 10 feet  
BORING DIAMETER: 2 inches      WELL DIAMETER: NA

TOP OF CASING ELEVATION: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: NA	27.84783487	97.07394227

REMARKS: Boring located along the east side of the access road leading to the property.

☰ WATER LEVEL IN WELL: NA  
☷ PRODUCT LEVEL IN WELL: NA

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	WELL COMPLETION
0						
0-3'		SM	Silty sand, brown, dry.		80	
3-4'			Silty sand, dark, damp, oily.			
4-5'		SC	Silty clay, damp, black, oily.			
5-7'			Silty sand, wet, oily.	SWW-1A (6)		
7-10'		SM	Silty sand, wet.		75	
8.8'			Wet at 8.8 ft.			
12						
14						
16						



*Sam Enis*



**SQ Environmental, LLC**  
 PO Box 1991  
 Austin, TX 78767-1991  
 (512) 417-4659 or (512) 656-9445

**Boring/Well Log**

BORING ID: **SWW-1A-B1**

WELL ID: NA

**PROJECT INFORMATION** **DRILLING INFORMATION**

PROJECT: Harbor Island SITE LOCATION: HWY 361, Aransas Pass, Texas JOB NUMBER: 1089.006.001 PROJECT MANAGER: Sam Enis, P.G. LOGGED BY: Kaitlin Johnson DATE(S) DRILLED: 9/11/2019	DRILLING COMPANY: Tolunay-Wong Engineers (TWE) DRILLING METHOD: Direct Push TOTAL DEPTH: 10 ft BORING DIAMETER: 2 in      WELL DIAMETER: NA				
TOP OF CASING ELEVATION: NA GROUND ELEVATION: NA	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">N. LATITUDE</td> <td style="width: 50%;">W. LONGITUDE</td> </tr> <tr> <td>27.84784404</td> <td>97.07394648</td> </tr> </table>	N. LATITUDE	W. LONGITUDE	27.84784404	97.07394648
N. LATITUDE	W. LONGITUDE				
27.84784404	97.07394648				

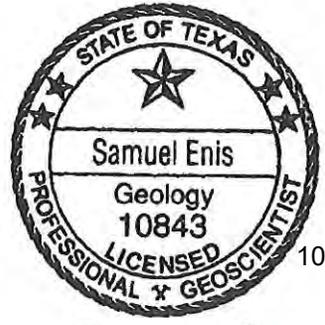
REMARKS: Boring is located northeast of boring SWW-1A east of the access road leading to Harbor Island

WATER LEVEL IN WELL: NA  
 PRODUCT LEVEL IN WELL: NA

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	WELL COMPLETION
-------	-----------	------	-------------	-----------	--------	-----------------

0			0-5': Silty sand, dry, brown.			
2					50	
4						
6	CL		5-6' : Silty clay, friable, low plasticity.			
8	SM		6-10' : Silty sand, brown, moist.	SWW-1A-B1 (6)		
10					75	
12						
14						
16						

Wet at 8 ft.



*Samuel Enis*



**SQ Environmental, LLC**  
 PO Box 1991  
 Austin, TX 78767-1991  
 (512) 417-4659 or (512) 656-9445

**Boring/Well Log**

BORING ID: **SWW-1A-B2**

WELL ID: NA

**PROJECT INFORMATION** **DRILLING INFORMATION**

PROJECT: Harbor Island  
 SITE LOCATION: HWY 361, Aransas Pass, Texas  
 JOB NUMBER: 1089.006.001  
 PROJECT MANAGER: Sam Enis, P.G.  
 LOGGED BY: Kaitlin Johnson  
 DATE(S) DRILLED: 9/11/2019

DRILLING COMPANY: Tolunay-Wong Engineers (TWE)  
 DRILLING METHOD: Direct Push  
 TOTAL DEPTH: 10 ft  
 BORING DIAMETER: 2 in      WELL DIAMETER: NA

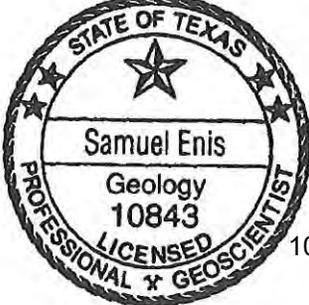
TOP OF CASING ELEVATION: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: NA	27.84780966	97.07392189

REMARKS: Boring located southeast of SWW-1A east of the access road leading to the subject property.

☒ WATER LEVEL IN WELL: NA  
 ☒ PRODUCT LEVEL IN WELL: NA

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	WELL COMPLETION
-------	-----------	------	-------------	-----------	--------	-----------------

0						
2		SM	0-6': Silty sandy, brown, dry.			
4						
6		SC	6-7': Silty clay, moist, friable, low plasticity.	SWW-1A-B2 (6)		
8		SM	7-10': Silty sand, brown, moist.			
10			Wet at 9 ft.			
12						
14						
16						



10/16/2019

*Samuel Enis*

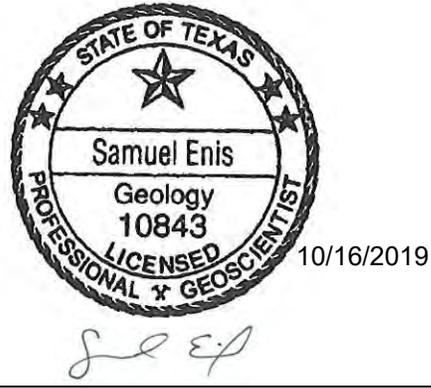
	<b>SQ Environmental, LLC</b> PO Box 1991 Austin, TX 78767-1991 (512) 417-4659 or (512) 656-9445	<h2 style="margin: 0;">Boring/Well Log</h2>
	BORING ID: <b>SWW-1A-B3</b>  WELL ID: NA	Page 26 of 66

PROJECT INFORMATION	DRILLING INFORMATION
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PROJECT: Harbor Island SITE LOCATION: HWY 361, Aransas Pass, Texas JOB NUMBER: 1089.006.001 PROJECT MANAGER: Sam Enis LOGGED BY: Kaitlin Johnson DATE(S) DRILLED: 6/11/2019	DRILLING COMPANY: Tolunay-Wong Engineers (TWE) DRILLING METHOD: Direct Push TOTAL DEPTH: 10 ft BORING DIAMETER: 2 in      WELL DIAMETER: NA				
TOP OF CASING ELEVATION: NA  GROUND ELEVATION: NA	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">N. LATITUDE</td> <td style="width: 50%;">W. LONGITUDE</td> </tr> <tr> <td style="text-align: center;">27.8478200</td> <td style="text-align: center;">97.07395127</td> </tr> </table>	N. LATITUDE	W. LONGITUDE	27.8478200	97.07395127
N. LATITUDE	W. LONGITUDE				
27.8478200	97.07395127				

REMARKS: Boring is located on the east side of the access road leading to the subject property.	WATER LEVEL IN WELL: NA  PRODUCT LEVEL IN WELL: NA
---	--

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	WELL COMPLETION
0						
2		SM	0-4': Silty sand, dry, brown.		80	
4		SC	4-6': Silty clay, damp, gray. Friable, low plasticity.			
6				SWW -1A- B3 (6)	100	
8		SM	6-10': Silty sandy, moist, brown.			
10						
12						
14						
16						



	<b>SQ Environmental, LLC</b> PO Box 1991 Austin, TX 78767-1991 (512) 417-4659 or (512) 656-9445	<h2 style="margin: 0;">Boring/Well Log</h2>
	BORING ID: <b>SWW-2A</b>  WELL ID: NA	

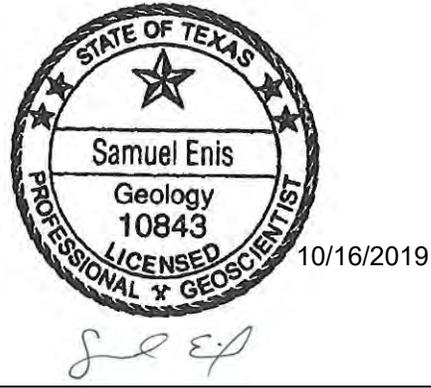
PROJECT INFORMATION	DRILLING INFORMATION
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PROJECT: Harbor Island SITE LOCATION: HWY 361, Aransas Pass, Texas JOB NUMBER: 1089.006.001 PROJECT MANAGER: Sam Enis, P.G. LOGGED BY: Kaitlin Johnson DATE(S) DRILLED: 9/10/2019	DRILLING COMPANY: Tolunay-Wong Engineers (TWE) DRILLING METHOD: Direct Push TOTAL DEPTH: 10 ft BORING DIAMETER: 2 in      WELL DIAMETER: NA				
TOP OF CASING ELEVATION: NA  GROUND ELEVATION: NA	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">N. LATITUDE</td> <td style="width: 30%;">W. LONGITUDE</td> </tr> <tr> <td style="text-align: center;">27.84790085</td> <td style="text-align: center;">97.07401736</td> </tr> </table>	N. LATITUDE	W. LONGITUDE	27.84790085	97.07401736
N. LATITUDE	W. LONGITUDE				
27.84790085	97.07401736				

REMARKS: Boring located northwest of boring SWW-1A on the east side of the access road leading to the subject property.	<table style="width:100%;"> <tr> <td style="width: 20px; text-align: center;"></td> <td>WATER LEVEL IN WELL: NA</td> </tr> <tr> <td style="width: 20px; text-align: center;"></td> <td>PRODUCT LEVEL IN WELL: NA</td> </tr> </table>		WATER LEVEL IN WELL: NA		PRODUCT LEVEL IN WELL: NA
	WATER LEVEL IN WELL: NA				
	PRODUCT LEVEL IN WELL: NA				

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	WELL COMPLETION
-------	-----------	------	-------------	-----------	--------	-----------------

0		SM	0-1': Silty sand, dry, brown.			
2		SC	1-2': Silty clay, moist, friable, low plasticity.		90	
4		SM	2-10': Silty sand, moist, brown.			
6						
8			Wet at 8 ft.	SWW-2A (6)	80	
10						
12						
14						
16						





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**Boring/Well Log**

BORING ID: **TT-1A-10**

WELL ID: NA

**PROJECT INFORMATION**

**DRILLING INFORMATION**

PROJECT: Harbor Island  
 SITE LOCATION: HWY 361, Aransas Pass, Texas  
 JOB NUMBER: 1089.006.001  
 PROJECT MANAGER: Sam Enis, P.G.  
 LOGGED BY: Kaitlin Johnson  
 DATE(S) DRILLED: 6/10/2019

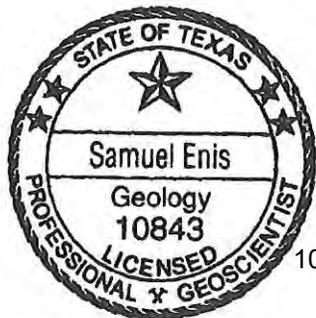
DRILLING COMPANY: Tolunay-Wong Engineers (TWE)  
 DRILLING METHOD: Direct Push  
 TOTAL DEPTH: 12 ft  
 BORING DIAMETER: 2 in      WELL DIAMETER: NA

TOP OF CASING ELEVATION: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: NA	27.84630434	97.06846932

REMARKS: Boring is located in the northwest corner of the fenced area.

WATER LEVEL IN WELL: NA  
 PRODUCT LEVEL IN WELL: NA

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	WELL COMPLETION
0	LITHOLOGY	SM	0-5.5': Silty sand, dry.	TT-1A-10 (8)	75	
2			5.5- 7': Silty sand, wet, dark.			
4			7-8' : Silty sand, oily.			
6			8-12' : Silty sand, moist Wet at 9 ft.			
8					90	
10						
12						
14						
16						



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**Boring/Well Log**

BORING ID: **TT-1A-NE-7A**

WELL ID: NA

**PROJECT INFORMATION**

**DRILLING INFORMATION**

PROJECT: Harbor Island  
SITE LOCATION: HWY 361, Aransas Pass, Texas  
JOB NUMBER: 1089.006.001  
PROJECT MANAGER: Sam Enis, P.G.  
LOGGED BY: Kaitlin Johnson  
DATE(S) DRILLED: 9/10/2019

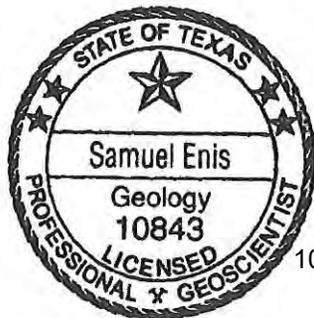
DRILLING COMPANY: Tolunay- Wong Engineers (TWE)  
DRILLING METHOD: Direct Push  
TOTAL DEPTH: 10 feet  
BORING DIAMETER: 2 inches      WELL DIAMETER: NA

TOP OF CASING ELEVATION: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: NA	27.84626595	97.06874641

REMARKS: Boring located outside of the fenced area approximately ten feet northwest of TT-1A-10.

≡ WATER LEVEL IN WELL: NA  
▼ PRODUCT LEVEL IN WELL: NA

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	WELL COMPLETION
0		SW	0-2': Sand, dry, brown.			
2			2-3': Silty sand, brown, damp.		50	
4		SC	3-7': Silty clay, moist, friable, low plasticity.	TT-1A-NE-7A (4)		
6					80	
8		SM	7-10': Sand, brown, moist.			
10						
12						
14						
16						



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**Boring/Well Log**

BORING ID: **TT-1B-16**

WELL ID: NA

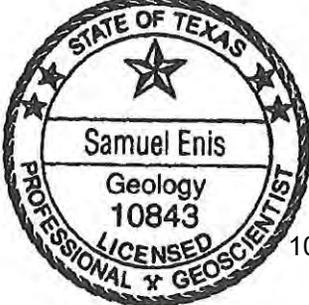
**PROJECT INFORMATION** **DRILLING INFORMATION**

PROJECT: Harbor Island SITE LOCATION: HWY 361, Aransas Pass, Texas JOB NUMBER: 1089.006.001 PROJECT MANAGER: Sam Enis, P.G. LOGGED BY: Kaitlin Johnson DATE(S) DRILLED: 9/10/2019	DRILLING COMPANY: Tolunay-Wong Engineers (TWE) DRILLING METHOD: Direct Push TOTAL DEPTH: 10 ft BORING DIAMETER: 2 in      WELL DIAMETER: NA				
TOP OF CASING ELEVATION: NA GROUND ELEVATION: NA	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">N. LATITUDE</td> <td style="width: 50%;">W. LONGITUDE</td> </tr> <tr> <td>27.8461808</td> <td>97.06791317</td> </tr> </table>	N. LATITUDE	W. LONGITUDE	27.8461808	97.06791317
N. LATITUDE	W. LONGITUDE				
27.8461808	97.06791317				

REMARKS: Boring is located east of TT-1A-10 in the northern portion of the gravel lot.

WATER LEVEL IN WELL: NA  
 PRODUCT LEVEL IN WELL: NA

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	WELL COMPLETION
0		SM	0-3': Silty sand, dry, brown.		50	
2						
4		SC	3-5': Silty clay, dry, friable, low plasticity.			
6		SM	5-8': Sand, black, oily.			
8			8-10': Sand, brown.	TT-1B-16 (8)	75	
10			Wet at 9 ft.			
12						
14						
16						



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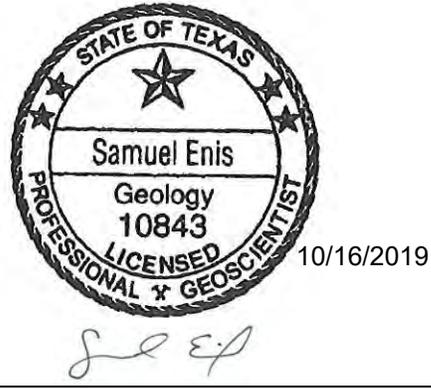
 <p><b>SQ Environmental, LLC</b> PO Box 1991 Austin, TX 78767-1991 (512) 417-4659 or (512) 656-9445</p>	<p style="text-align: center;"><b>Boring/Well Log</b></p> <p>BORING ID: TT-1B-16-B1</p> <p>WELL ID: NA</p>
--	--

PROJECT INFORMATION	DRILLING INFORMATION
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<p>PROJECT: Harbor Island SITE LOCATION: HWY 361, Aransas Pass, Texas JOB NUMBER: 1089.006.001 PROJECT MANAGER: Sam Enis, P.G. LOGGED BY: Kaitlin Johnson DATE(S) DRILLED: 9/11/2019</p>	<p>DRILLING COMPANY: Tolunay-Wong Engineers (TWE) DRILLING METHOD: Direct Push TOTAL DEPTH: 10 ft BORING DIAMETER: 2 in      WELL DIAMETER: NA</p>				
<p>TOP OF CASING ELEVATION: NA GROUND ELEVATION: NA</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">N. LATITUDE</td> <td style="width: 33%;">W. LONGITUDE</td> </tr> <tr> <td style="text-align: center;">27.84626858</td> <td style="text-align: center;">97.06782245</td> </tr> </table>	N. LATITUDE	W. LONGITUDE	27.84626858	97.06782245
N. LATITUDE	W. LONGITUDE				
27.84626858	97.06782245				

REMARKS: Boring located approximately 10 feet north of boring TT-1B-16.	<p>☒ WATER LEVEL IN WELL: NA</p> <p>☒ PRODUCT LEVEL IN WELL: NA</p>
---	---

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	WELL COMPLETION
0	[Lithology Column]	SM	0-5': Sand, brown, dry.	TT-1B-16-B1 (8)	50	[Well Completion Column]
2			5-7': Sand, brown, moist.		75	
4			7-10': Sand, brown, wet at 8 ft.			
6						
8						
10						
12						
14						
16						





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**Boring/Well Log**

BORING ID: **TT-1B-16-B2**

WELL ID: NA

**PROJECT INFORMATION**

**DRILLING INFORMATION**

PROJECT: Harbor Island  
SITE LOCATION: HWY 361, Aransas Pass, Texas  
JOB NUMBER: 1089.006.001  
PROJECT MANAGER: Sam Enis, P.G.  
LOGGED BY: Kaitlin Johnson  
DATE(S) DRILLED: 9/11/2019

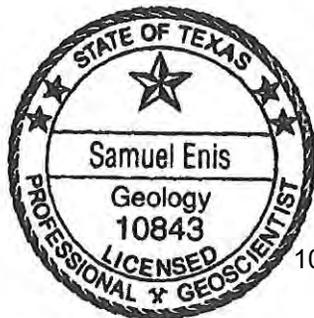
DRILLING COMPANY: Tolunay- Wong Engineers (TWE)  
DRILLING METHOD: Direct Push  
TOTAL DEPTH: 10 feet  
BORING DIAMETER: 2 inches WELL DIAMETER: NA

TOP OF CASING ELEVATION: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: NA	27.84619871	97.06796228

REMARKS: Boring located approximately ten feet southwest of TT-1B-16.

☹ WATER LEVEL IN WELL: NA  
☹ PRODUCT LEVEL IN WELL: NA

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	OVM	WELL COMPLETION
0							
0-6'		SM	0-6': Silty sand, brown, dry.		75		
6-7'		CL	6-7': Silty clay, damp, friable, low plasticity.		75		
7-8'		SM	7-8': Sand, brown, damp.	TT-1B-16-B2 (8)			
8-9'		SC	8-9': Silty clay, friable, low plasticity.				
9-10'		SM	9-10': Sand, brown, wet.				
10							
12							
14							
16							



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**Boring/Well Log**

BORING ID: **TT-1B-16-B3**

WELL ID: NA

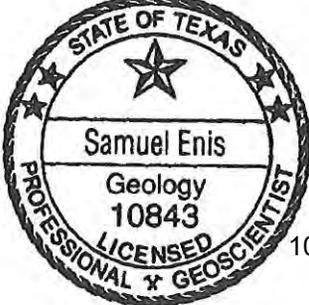
**PROJECT INFORMATION** **DRILLING INFORMATION**

<p>PROJECT: Harbor Island SITE LOCATION: HWY 361, Aransas Pass, Texas JOB NUMBER: 1089.006.001 PROJECT MANAGER: Sam Enis, P.G. LOGGED BY: Kaitlin Johnson DATE(S) DRILLED: 9/11/2019</p>	<p>DRILLING COMPANY: Tolunay-Wong Engineers (TWE) DRILLING METHOD: Direct Push TOTAL DEPTH: 10 ft BORING DIAMETER: 2 in      WELL DIAMETER: NA</p>				
<p>TOP OF CASING ELEVATION: NA GROUND ELEVATION: NA</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">N. LATITUDE</td> <td style="width: 50%;">W. LONGITUDE</td> </tr> <tr> <td>27.84615466</td> <td>97.06787678</td> </tr> </table>	N. LATITUDE	W. LONGITUDE	27.84615466	97.06787678
N. LATITUDE	W. LONGITUDE				
27.84615466	97.06787678				

REMARKS: Boring is located approximately 10 ft southeast of boring TT-1B-16.

WATER LEVEL IN WELL: NA  
 PRODUCT LEVEL IN WELL: NA

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	WELL COMPLETION
0		SM	0-4': Silty sand, dry, brown.		50	
2		CL	4-6': Clay and clayey sand, moist, gray, soft.			
4		SW	6-10': Silty sand. Brown.		50	
6			Wet at 8.5 ft.	TT-1B-16-B3 (8)		
8						
10						
12						
14						
16						



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**Boring/Well Log**

BORING ID: **TT-2A-13**  
 WELL ID: NA

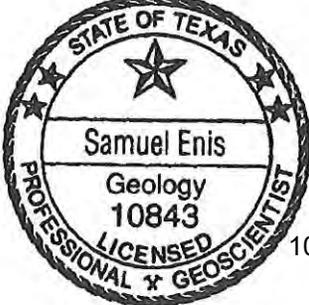
**PROJECT INFORMATION** **DRILLING INFORMATION**

PROJECT: Harbor Island SITE LOCATION: HWY 361, Aransas Pass, Texas JOB NUMBER: 1089.006.001 PROJECT MANAGER: Sam Enis, P.G. LOGGED BY: Kaitlin Johnson DATE(S) DRILLED: 9/9/2019	DRILLING COMPANY: Tolunay-Wong Engineers (TWE) DRILLING METHOD: Direct Push TOTAL DEPTH: 10 ft BORING DIAMETER: 2 in      WELL DIAMETER: NA				
TOP OF CASING ELEVATION: NA GROUND ELEVATION: NA	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">N. LATITUDE</td> <td style="width: 50%;">W. LONGITUDE</td> </tr> <tr> <td>27.84559005</td> <td>97.06662895</td> </tr> </table>	N. LATITUDE	W. LONGITUDE	27.84559005	97.06662895
N. LATITUDE	W. LONGITUDE				
27.84559005	97.06662895				

REMARKS: Boring located north of the former building location.

WATER LEVEL IN WELL: NA  
 PRODUCT LEVEL IN WELL: NA

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	WELL COMPLETION
0		SM	0-3': Silty sand, dry, brown.			
2					50	
4		CL	3-5': Silty clay, damp, gray. Friable, low plasticity.			
6		SM	5-10': Silty sand, light brown.	TT-2A-13 (6)		
8					90	
10			Wet at 9'.			
12						
14						
16						



10/16/2019

*Samuel Enis*

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	BORING ID: TT-2A-14  WELL ID: NA	Page 35 of 166

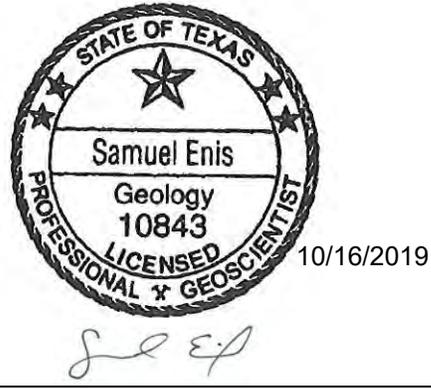
PROJECT INFORMATION	DRILLING INFORMATION
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PROJECT: Harbor Island SITE LOCATION: HWY 361, Aransas Pass, Texas JOB NUMBER: 1089.006.001 PROJECT MANAGER: Sam Enis, P.G. LOGGED BY: Kaitlin Johnson DATE(S) DRILLED: 9/10/2019	DRILLING COMPANY: Tolunay- Wong Engineers (TWE) DRILLING METHOD: Direct Push TOTAL DEPTH: 10 feet BORING DIAMETER: 2 inches      WELL DIAMETER: NA				
TOP OF CASING ELEVATION: NA  GROUND ELEVATION: NA	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">N. LATITUDE</td> <td style="width: 33%;">W. LONGITUDE</td> </tr> <tr> <td style="text-align: center;">27.84548294</td> <td style="text-align: center;">97.06644494</td> </tr> </table>	N. LATITUDE	W. LONGITUDE	27.84548294	97.06644494
N. LATITUDE	W. LONGITUDE				
27.84548294	97.06644494				

REMARKS: Boring located southeast of TT-2A-13.	☹ WATER LEVEL IN WELL: NA  ▼ PRODUCT LEVEL IN WELL: NA
--	--

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	OVM	WELL COMPLETION
-------	-----------	------	-------------	-----------	--------	-----	-----------------

0							
2		SM	0-3': Sand, dry, brown.		75		
4		SC	3-5' : Silty clay, moist, friable, low plasticity.				
6		SM	5-10' : Silty sand, brown.		75		
8				TT-2A-14 (8)			
10			Wet at 9 ft.				
12							
14							
16							





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# Boring/Well Log

BORING ID: **TT-2A-B2**  
 WELL ID: NA

## PROJECT INFORMATION

## DRILLING INFORMATION

PROJECT: Harbor Island  
 SITE LOCATION: HWY 361, Aransas Pass, Texas  
 JOB NUMBER: 1089.006.001  
 PROJECT MANAGER: Sam Enis, P.G.  
 LOGGED BY: Kaitlin Johnson  
 DATE(S) DRILLED: 9/11/2019

DRILLING COMPANY: Tolunay-Wong Engineers (TW)  
 DRILLING METHOD: Direct Push  
 TOTAL DEPTH: 10 ft  
 BORING DIAMETER: 2 in      WELL DIAMETER: NA

TOP OF CASING ELEVATION: NA	N. LATITUDE 27.8453826	W. LONGITUDE 97.06668107
GROUND ELEVATION: NA		

REMARKS: Boring located approximately ten feet east of boring TT-2B-4.

☞ WATER LEVEL IN WELL: NA  
 ☞ PRODUCT LEVEL IN WELL: NA

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	WELL COMPLETION
0		SM	0-5': Silty sand, brown, dry.		50	
5		SC	5-9': Silty clay, moist, friable, low plasticity.		75	
9		SM	9-10': Sand, wet, brown.	TT-2A-B2 (8)		
12						
16			<i>Sam Enis</i>			

	<b>SQ Environmental, LLC</b> PO Box 1991 Austin, TX 78767-1991 (512) 417-4659	<h2 style="margin: 0;">Boring/Well Log</h2>
	BORING ID: <b>TT-2A-B4</b>  WELL ID: NA	

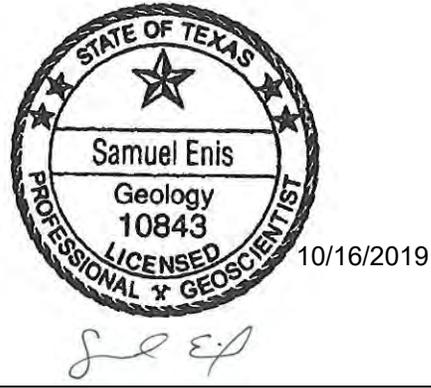
PROJECT INFORMATION	DRILLING INFORMATION
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PROJECT: Harbor Island SITE LOCATION: HWY 361, Aransas Pass, Texas JOB NUMBER: 1089.006.001 PROJECT MANAGER: Sam Enis, P.G. LOGGED BY: Kaitlin Johnson DATE(S) DRILLED: 9/10/2019	DRILLING COMPANY: Tolunay- Wong Engineers (TWE) DRILLING METHOD: Direct Push TOTAL DEPTH: 10 feet BORING DIAMETER: 2 inches      WELL DIAMETER: NA				
TOP OF CASING ELEVATION: NA  GROUND ELEVATION: NA	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">N. LATITUDE</td> <td style="width: 30%;">W. LONGITUDE</td> </tr> <tr> <td style="text-align: center;">27.8453242</td> <td style="text-align: center;">97.06663039</td> </tr> </table>	N. LATITUDE	W. LONGITUDE	27.8453242	97.06663039
N. LATITUDE	W. LONGITUDE				
27.8453242	97.06663039				

REMARKS: Boring located approximately 50 ft south of TT-2A-13.	<table style="width:100%;"> <tr> <td style="text-align: center;">≡</td> <td>WATER LEVEL IN WELL: NA</td> </tr> <tr> <td style="text-align: center;">▼</td> <td>PRODUCT LEVEL IN WELL: NA</td> </tr> </table>	≡	WATER LEVEL IN WELL: NA	▼	PRODUCT LEVEL IN WELL: NA
≡	WATER LEVEL IN WELL: NA				
▼	PRODUCT LEVEL IN WELL: NA				

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	WELL COMPLETION
-------	-----------	------	-------------	-----------	--------	-----------------

0			0-6': Silty sand, dry, brown.  Moist at 2 ft.		50	
2						
4						
6			6-10': Sand, light brown, dry-moist.  Wet at 8.5 ft.	TT-2A-B4 (8)	75	
8						
10						
12						
14						
16						





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**Boring/Well Log**

BORING ID: **TT-2A-SB27**

WELL ID: NA

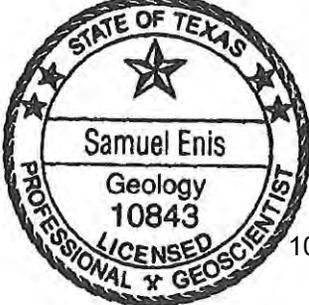
**PROJECT INFORMATION** **DRILLING INFORMATION**

PROJECT: Harbor Island SITE LOCATION: HWY 361, Aransas Pass, Texas JOB NUMBER: 1089.006.001 PROJECT MANAGER: Sam Enis, P.G. LOGGED BY: Kaitlin Johnson DATE(S) DRILLED: 9/10/2019	DRILLING COMPANY: Tolunay-Wong Engineers (TWE) DRILLING METHOD: Direct Push TOTAL DEPTH: 10 ft BORING DIAMETER: 2 in      WELL DIAMETER: NA				
TOP OF CASING ELEVATION: NA GROUND ELEVATION: NA	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">N. LATITUDE</td> <td style="width: 50%;">W. LONGITUDE</td> </tr> <tr> <td>27.84559936</td> <td>97.09938333</td> </tr> </table>	N. LATITUDE	W. LONGITUDE	27.84559936	97.09938333
N. LATITUDE	W. LONGITUDE				
27.84559936	97.09938333				

REMARKS: Boring is located northeast of former building area.

 WATER LEVEL IN WELL: NA  
 PRODUCT LEVEL IN WELL: NA

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	WELL COMPLETION
0		SM	0-3': Silty Sand, brown, dry.		50	
2		CL	3-8': Sandy clay, soft, friable, moist.			
4					TT-2A-SB27 (6-8)	50
6		SW	8-10': Sand, light brown, wet at 8 ft.			
8						
10						
12						
14						
16						



10/16/2019

*Samuel Enis*



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 Austin, TX 78767-1991  
 (512) 417-4659 or (512) 656-9445

# Boring/Well Log

BORING ID: **TT-2A-SLAB**  
 WELL ID: NA

## PROJECT INFORMATION

## DRILLING INFORMATION

PROJECT: Harbor Island  
 SITE LOCATION: HWY 361, Aransas Pass, Texas  
 JOB NUMBER: 1089.006.001  
 PROJECT MANAGER: Sam Enis, P.G.  
 LOGGED BY: Kaitlin Johnson  
 DATE(S) DRILLED: 9/10/2019

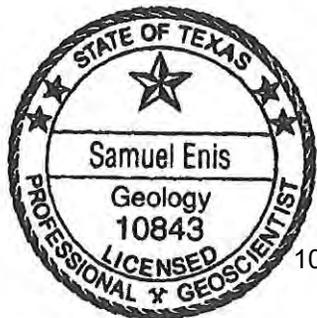
DRILLING COMPANY: Tolunay-Wong Engineers (TW)  
 DRILLING METHOD: Direct Push  
 TOTAL DEPTH: 12 ft  
 BORING DIAMETER: 2 in      WELL DIAMETER: NA

TOP OF CASING ELEVATION: NA	N. LATITUDE 27.84569933	W. LONGITUDE 97.06633235
GROUND ELEVATION: NA		

REMARKS: Boring located northeast of former building.

☞ WATER LEVEL IN WELL: NA  
 ☞ PRODUCT LEVEL IN WELL: NA

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	WELL COMPLETION
0		SW	0-3': Silty Sand, brown, dry.			
2		CL	3-5': Sandy clay, soft, friable, low plasticity, moist.		50	
6		SW	5-12': Sand, moist. Wet at 9 feet.		75	
10			Oily at 10 feet.	TT-2A-SLAB (10)		
12						
14						
16						



10/16/2019

*Samuel Enis*



**SQ Environmental, LLC**  
PO Box 1991  
Austin, TX 78767-1991  
(512) 417-4659

**Boring/Well Log**

BORING ID: **TT-2B-4**

WELL ID: NA

**PROJECT INFORMATION**

**DRILLING INFORMATION**

PROJECT: Harbor Island  
SITE LOCATION: HWY 361, Aransas Pass, Texas  
JOB NUMBER: 1089.006.001  
PROJECT MANAGER: Sam Enis, P.G.  
LOGGED BY: Kaitlin Johnson  
DATE(S) DRILLED: 9/10/2019

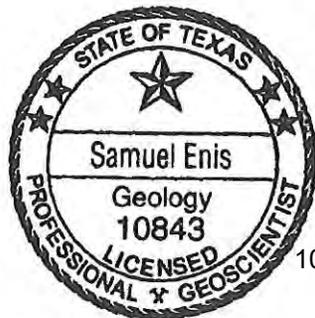
DRILLING COMPANY: Tolunay-Wong Engineers (TWE)  
DRILLING METHOD: Direct Push  
TOTAL DEPTH: 10 feet  
BORING DIAMETER: 2 inches WELL DIAMETER: NA

TOP OF CASING ELEVATION: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: NA	27.8454276	97.06692181

REMARKS: Boring located west of former building location.

☒ WATER LEVEL IN WELL: NA  
☒ PRODUCT LEVEL IN WELL: NA

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	WELL COMPLETION
0		SM	0-4': Silty Sand, dry, Brown.		50	
4		CL	4-5': Silty Clay, soft, friable, low plasticity, gray, moist.			
5		SM	5-10': Silty sand, light brown.	TT-2B-4 (6)	50	
8			Wet at 8 ft.			



10/16/2019

*Samuel Enis*

 <p><b>SQ Environmental, LLC</b> PO Box 1991 Austin, TX 78767-1991 (512) 417-4659 or (512) 656-9445</p>	<p style="text-align: center;"><b>Boring/Well Log</b></p> <p>BORING ID: <b>TT-2E-4</b></p> <p>WELL ID: NA</p>
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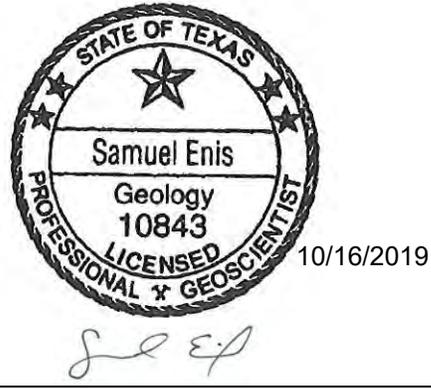
PROJECT INFORMATION	DRILLING INFORMATION
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<p>PROJECT: Harbor Island SITE LOCATION: HWY 361, Aransas Pass, Texas JOB NUMBER: 1089.006.001 PROJECT MANAGER: Sam Enis, P.G. LOGGED BY: Kaitlin Johnson DATE(S) DRILLED: 9/10/2019</p>	<p>DRILLING COMPANY: Tolunay-Wong Engineers (TWE) DRILLING METHOD: Direct Push TOTAL DEPTH: 10 ft BORING DIAMETER: 2 in      WELL DIAMETER: NA</p>				
<p>TOP OF CASING ELEVATION: NA GROUND ELEVATION: NA</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">N. LATITUDE</td> <td style="width: 50%;">W. LONGITUDE</td> </tr> <tr> <td>27.84608851</td> <td>97.06645313</td> </tr> </table>	N. LATITUDE	W. LONGITUDE	27.84608851	97.06645313
N. LATITUDE	W. LONGITUDE				
27.84608851	97.06645313				

REMARKS: Boring is located northeast of former building location.	<p>☒ WATER LEVEL IN WELL: NA</p> <p>☒ PRODUCT LEVEL IN WELL: NA</p>
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DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	WELL COMPLETION
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0			0-5': Silty sand, dry, brown.			
2					75	
4						
6			5-10': Sand, dry-damp, brown.			
8			Wet at 8.5 ft.	TT-2E-4 (8)	50	
10						
12						
14						
16						





**SQ Environmental, LLC**  
 PO Box 1991  
 Austin, TX 78767-1991  
 (512) 417-4659 or (512) 656-9445

# Boring/Well Log

BORING ID: **TT-5A-5A**  
 WELL ID: NA

## PROJECT INFORMATION

## DRILLING INFORMATION

PROJECT: Harbor Island  
 SITE LOCATION: HWY 361, Aransas Pass, Texas  
 JOB NUMBER: 1089.006.001  
 PROJECT MANAGER: Sam Enis, P.G.  
 LOGGED BY: Kaitlin Johnson  
 DATE(S) DRILLED: 9/10/2019

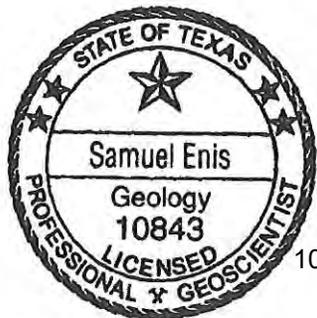
DRILLING COMPANY: Tolunay-Wong Engineers (TW)  
 DRILLING METHOD: Direct Push  
 TOTAL DEPTH: 10 ft  
 BORING DIAMETER: 2 in      WELL DIAMETER: NA

TOP OF CASING ELEVATION: NA	N. LATITUDE	W. LONGITUDE
GROUND ELEVATION: NA	27.84659871	97.06719650

REMARKS: Boring located in the northwestern section of the fenced area southwest of the camera pole.

☒ WATER LEVEL IN WELL: NA  
 ☒ PRODUCT LEVEL IN WELL: NA

DEPTH	LITHOLOGY	USCS	DESCRIPTION	SAMPLE ID	REC. %	WELL COMPLETION
0		SM	0-8': Silty sand, dry, brown.		75	
8			8-10': Sand, wet at 8.5'.	TT-5A-5A (8)	50	
10						
12						
14						
16						



10/16/2019

*Samuel Enis*

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# **ATTACHMENT 2**

## **STATE DRILLER REPORTS**

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	<i>Strata Depth (ft.)</i>	<i>Water Type</i>
Water Quality:	<b>No Data</b>	<b>No Data</b>

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which  
contained injurious constituents?: **No**

**The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Tolunay-Wong Engineers**

**6955 Crestway Rd  
San Antonio, TX 78239**

Driller Name: **Stanley Grover** License Number: **54247**

Comments: **No Data**

**Report Amended on 10/21/2019 by Request #29045**

Lithology:  
DESCRIPTION & COLOR OF FORMATION MATERIAL

Casing:  
BLANK PIPE & WELL SCREEN DATA

Top (ft.)	Bottom (ft.)	Description
<b>0</b>	<b>4</b>	<b>Silty Sand</b>
<b>4</b>	<b>5</b>	<b>Silty Clay</b>
<b>5</b>	<b>10</b>	<b>Silty Sand, wet</b>

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
<b>No Data</b>			

**IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY**

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**Texas Department of Licensing and Regulation  
P.O. Box 12157  
Austin, TX 78711  
(512) 334-5540**





	<i>Strata Depth (ft.)</i>	<i>Water Type</i>
Water Quality:	<b>No Data</b>	<b>No Data</b>

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which  
contained injurious constituents?: **No**

**The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Tolunay-Wong Engineers**

**6955 Crestway Rd  
San Antonio, TX 78239**

Driller Name: **Stanley Grover** License Number: **54247**

Comments: **No Data**

**Report Amended on 10/21/2019 by Request #29046**

Lithology:  
DESCRIPTION & COLOR OF FORMATION MATERIAL

Casing:  
BLANK PIPE & WELL SCREEN DATA

<i>Top (ft.)</i>	<i>Bottom (ft.)</i>	<i>Description</i>
<b>0</b>	<b>5</b>	<b>Silty Sand</b>
<b>5</b>	<b>6</b>	<b>Silty Clay</b>
<b>6</b>	<b>10</b>	<b>Silty Sand, wet</b>

<i>Dia. (in.)</i>	<i>New/Used</i>	<i>Type</i>	<i>Setting From/To (ft.)</i>
<b>No Data</b>			

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Austin, TX 78711  
(512) 334-5540**





	<i>Strata Depth (ft.)</i>	<i>Water Type</i>
Water Quality:	<b>No Data</b>	<b>No Data</b>

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which  
contained injurious constituents?: **No**

**The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Tolunay-Wong Engineers**  
**6955 Crestway Rd**  
**San Antonio, TX 78239**

Driller Name: **Stanley Grover** License Number: **54247**

Comments: **No Data**

**Report Amended on 10/21/2019 by Request #29048**

Lithology:  
DESCRIPTION & COLOR OF FORMATION MATERIAL

Casing:  
BLANK PIPE & WELL SCREEN DATA

<i>Top (ft.)</i>	<i>Bottom (ft.)</i>	<i>Description</i>
<b>0</b>	<b>6</b>	<b>Silty Sand</b>
<b>6</b>	<b>7</b>	<b>Silty Clay</b>
<b>7</b>	<b>10</b>	<b>Silty Sand, wet</b>

<i>Dia. (in.)</i>	<i>New/Used</i>	<i>Type</i>	<i>Setting From/To (ft.)</i>
<b>No Data</b>			

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**P.O. Box 12157**  
**Austin, TX 78711**  
**(512) 334-5540**





	<i>Strata Depth (ft.)</i>	<i>Water Type</i>
Water Quality:	<b>No Data</b>	<b>No Data</b>

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which  
contained injurious constituents?: **No**

**The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Tolunay-Wong Engineers**

**6955 Crestway Rd  
San Antonio, TX 78239**

Driller Name: **Stanley Grover** License Number: **54247**

Comments: **No Data**

**Report Amended on 10/21/2019 by Request #29047**

Lithology:  
DESCRIPTION & COLOR OF FORMATION MATERIAL

Casing:  
BLANK PIPE & WELL SCREEN DATA

Top (ft.)	Bottom (ft.)	Description
<b>0</b>	<b>4</b>	<b>Silty Sand</b>
<b>4</b>	<b>6</b>	<b>Silty Clay</b>
<b>6</b>	<b>10</b>	<b>Silty Sand, wet</b>

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
<b>No Data</b>			

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P.O. Box 12157  
Austin, TX 78711  
(512) 334-5540**



## STATE OF TEXAS WELL REPORT for Tracking #524120

Owner: <b>Port of Corpus Christi</b>	Owner Well #: <b>SWW-2A</b>
Address: <b>222 Power Street Corpus Christi, TX 78401</b>	Grid #: <b>83-16-2</b>
Well Location: <b>Hwy 361 Aransas Pass, TX 78336</b>	Latitude: <b>27° 50' 52.44" N</b>
Well County: <b>Nueces</b>	Longitude: <b>097° 04' 18.25" W</b>
Number of Wells Drilled: <b>21</b>	Elevation: <b>No Data</b>

Type of Work: <b>New Well</b>	Proposed Use: <b>Environmental Soil Boring</b>
-------------------------------	--

Drilling Start Date: **9/10/2019**      Drilling End Date: **9/10/2019**

	<i>Diameter (in.)</i>	<i>Top Depth (ft.)</i>	<i>Bottom Depth (ft.)</i>
Borehole:	<b>2</b>	<b>0</b>	<b>10</b>

Drilling Method: **Direct Push**

Borehole Completion: **Plugged**

	<i>Top Depth (ft.)</i>	<i>Bottom Depth (ft.)</i>	<i>Description (number of sacks &amp; material)</i>
Annular Seal Data:	<b>0</b>	<b>2</b>	<b>Concrete 0.25 Bags/Sacks</b>
	<b>2</b>	<b>10</b>	<b>Bentonite 0.5 Bags/Sacks</b>

Seal Method: **Poured**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **No Data**

**Surface Completion NOT by Driller**

Water Level: **8 ft. below land surface on 2019-09-11**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	<i>Strata Depth (ft.)</i>	<i>Water Type</i>
Water Quality:	<b>No Data</b>	<b>No Data</b>

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

**The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Tolunay-Wong Engineers**

**6955 Crestway Rd  
San Antonio, TX 78239**

Driller Name: **Stanley Grover** License Number: **54247**

Comments: **No Data**

**Report Amended on 10/21/2019 by Request #29049**

Lithology:  
DESCRIPTION & COLOR OF FORMATION MATERIAL

Casing:  
BLANK PIPE & WELL SCREEN DATA

<i>Top (ft.)</i>	<i>Bottom (ft.)</i>	<i>Description</i>
<b>0</b>	<b>1</b>	<b>Silty Sand</b>
<b>1</b>	<b>2</b>	<b>Silty Clay</b>
<b>2</b>	<b>10</b>	<b>Silty Sand, wet</b>

<i>Dia. (in.)</i>	<i>New/Used</i>	<i>Type</i>	<i>Setting From/To (ft.)</i>
<b>No Data</b>			

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P.O. Box 12157  
Austin, TX 78711  
(512) 334-5540**





	<i>Strata Depth (ft.)</i>	<i>Water Type</i>
Water Quality:	<b>No Data</b>	<b>No Data</b>

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

**The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Tolunay-Wong Engineers**

**6955 Crestway Rd  
San Antonio, TX 78239**

Driller Name: **Stanley Grover** License Number: **54247**

Comments: **No Data**

**Report Amended on 10/21/2019 by Request #29050**

Lithology:  
DESCRIPTION & COLOR OF FORMATION MATERIAL

Casing:  
BLANK PIPE & WELL SCREEN DATA

Top (ft.)	Bottom (ft.)	Description
<b>0</b>	<b>5</b>	<b>Silty Sand</b>
<b>5</b>	<b>8</b>	<b>Silty Sand</b>
<b>8</b>	<b>12</b>	<b>Silty Sand, wet</b>

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
<b>No Data</b>			

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Austin, TX 78711  
(512) 334-5540**





	<i>Strata Depth (ft.)</i>	<i>Water Type</i>
Water Quality:	<b>No Data</b>	<b>No Data</b>

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which  
contained injurious constituents?: **No**

**The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Tolunay-Wong Engineers**

**6955 Crestway Rd  
San Antonio, TX 78239**

Driller Name: **Stanley Grover** License Number: **54247**

Comments: **No Data**

**Report Amended on 10/21/2019 by Request #29051**

Lithology:  
DESCRIPTION & COLOR OF FORMATION MATERIAL

Casing:  
BLANK PIPE & WELL SCREEN DATA

Top (ft.)	Bottom (ft.)	Description
<b>0</b>	<b>2</b>	<b>Sand</b>
<b>2</b>	<b>3</b>	<b>Silty Sand</b>
<b>3</b>	<b>7</b>	<b>Silty Clay</b>
<b>7</b>	<b>10</b>	<b>Sand Brown</b>

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
<b>No Data</b>			

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**Austin, TX 78711**  
**(512) 334-5540**





	<i>Strata Depth (ft.)</i>	<i>Water Type</i>
Water Quality:	<b>No Data</b>	<b>No Data</b>

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which  
contained injurious constituents?: **No**

**The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Tolunay-Wong Engineers**

**6955 Crestway Rd  
San Antonio, TX 78239**

Driller Name: **Stanley Grover** License Number: **54247**

Comments: **No Data**

**Report Amended on 10/21/2019 by Request #29052**

Lithology:  
DESCRIPTION & COLOR OF FORMATION MATERIAL

Casing:  
BLANK PIPE & WELL SCREEN DATA

<i>Top (ft.)</i>	<i>Bottom (ft.)</i>	<i>Description</i>
<b>0</b>	<b>3</b>	<b>Silty Sand</b>
<b>3</b>	<b>5</b>	<b>Silty Clay</b>
<b>5</b>	<b>10</b>	<b>Silty Sand, wet</b>

<i>Dia. (in.)</i>	<i>New/Used</i>	<i>Type</i>	<i>Setting From/To (ft.)</i>
<b>No Data</b>			

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Austin, TX 78711  
(512) 334-5540**





	<i>Strata Depth (ft.)</i>	<i>Water Type</i>
Water Quality:	<b>No Data</b>	<b>No Data</b>

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which  
contained injurious constituents?: **No**

**The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Tolunay-Wong Engineers**

**6955 Crestway Rd  
San Antonio, TX 78239**

Driller Name: **Stanley Grover** License Number: **54247**

Comments: **No Data**

**Report Amended on 10/21/2019 by Request #29053**

Lithology:  
DESCRIPTION & COLOR OF FORMATION MATERIAL

Casing:  
BLANK PIPE & WELL SCREEN DATA

<i>Top (ft.)</i>	<i>Bottom (ft.)</i>	<i>Description</i>
<b>0</b>	<b>5</b>	<b>Sand Brown, Dry</b>
<b>5</b>	<b>7</b>	<b>Sand Brown, moist</b>
<b>5</b>	<b>10</b>	<b>Sand Brown, wet</b>

<i>Dia. (in.)</i>	<i>New/Used</i>	<i>Type</i>	<i>Setting From/To (ft.)</i>
<b>No Data</b>			

**IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY**

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Please include the report's Tracking Number on your written request.

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Austin, TX 78711  
(512) 334-5540**





	<i>Strata Depth (ft.)</i>	<i>Water Type</i>
Water Quality:	<b>No Data</b>	<b>No Data</b>

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which  
contained injurious constituents?: **No**

**The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Tolunay-Wong Engineers**

**6955 Crestway Rd  
San Antonio, TX 78239**

Driller Name: **Stanley Grover** License Number: **54247**

Comments: **No Data**

**Report Amended on 10/21/2019 by Request #29054**

Lithology:  
DESCRIPTION & COLOR OF FORMATION MATERIAL

Casing:  
BLANK PIPE & WELL SCREEN DATA

<i>Top (ft.)</i>	<i>Bottom (ft.)</i>	<i>Description</i>
<b>0</b>	<b>6</b>	<b>Silty Sand, brown, dry</b>
<b>6</b>	<b>7</b>	<b>Silty Clay</b>
<b>7</b>	<b>8</b>	<b>Sand Brown, damp</b>
<b>8</b>	<b>9</b>	<b>Silty Clay</b>
<b>9</b>	<b>10</b>	<b>Sand, Brown, wet</b>

<i>Dia. (in.)</i>	<i>New/Used</i>	<i>Type</i>	<i>Setting From/To (ft.)</i>
<b>No Data</b>			

**IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY**

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P.O. Box 12157  
Austin, TX 78711  
(512) 334-5540**





	<i>Strata Depth (ft.)</i>	<i>Water Type</i>
Water Quality:	<b>No Data</b>	<b>No Data</b>

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which  
contained injurious constituents?: **No**

**The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Tolunay-Wong Engineers**

**6955 Crestway Rd  
San Antonio, TX 78239**

Driller Name: **Stanley Grover** License Number: **54247**

Comments: **No Data**

**Report Amended on 10/21/2019 by Request #29055**

Lithology:  
DESCRIPTION & COLOR OF FORMATION MATERIAL

Casing:  
BLANK PIPE & WELL SCREEN DATA

Top (ft.)	Bottom (ft.)	Description
<b>0</b>	<b>4</b>	<b>Silty Sand, Brown, Dry</b>
<b>4</b>	<b>6</b>	<b>Clayey Sand, grey, moist</b>
<b>6</b>	<b>10</b>	<b>Silty Sand Brown, wet</b>

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
<b>No Data</b>			

**IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY**

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(512) 334-5540**



## STATE OF TEXAS WELL REPORT for Tracking #524131

Owner: <b>Port of Corpus Christi</b>	Owner Well #: <b>TT-2A-13</b>
Address: <b>222 Power Street Corpus Christi, TX 78401</b>	Grid #: <b>83-16-2</b>
Well Location: <b>Hwy 361 Aransas Pass, TX 78336</b>	Latitude: <b>27° 50' 44.12" N</b>
Well County: <b>Nueces</b>	Longitude: <b>097° 03' 59.86" W</b>
Number of Wells Drilled: <b>21</b>	Elevation: <b>No Data</b>

Type of Work: <b>New Well</b>	Proposed Use: <b>Environmental Soil Boring</b>
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Drilling Start Date: **9/9/2019**      Drilling End Date: **9/9/2019**

	<i>Diameter (in.)</i>	<i>Top Depth (ft.)</i>	<i>Bottom Depth (ft.)</i>
Borehole:	<b>2</b>	<b>0</b>	<b>10</b>

Drilling Method: **Direct Push**

Borehole Completion: **Plugged**

	<i>Top Depth (ft.)</i>	<i>Bottom Depth (ft.)</i>	<i>Description (number of sacks &amp; material)</i>
Annular Seal Data:	<b>0</b>	<b>2</b>	<b>Concrete 0.25 Bags/Sacks</b>
	<b>2</b>	<b>10</b>	<b>Bentonite 0.5 Bags/Sacks</b>

Seal Method: **Poured**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **No Data**

**Surface Completion NOT by Driller**

Water Level: **8 ft. below land surface on 2019-09-09**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	<i>Strata Depth (ft.)</i>	<i>Water Type</i>
Water Quality:	<b>No Data</b>	<b>No Data</b>

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

**The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Tolunay-Wong Engineers**

**6955 Crestway Rd  
San Antonio, TX 78239**

Driller Name: **Stanley Grover** License Number: **54247**

Comments: **No Data**

**Report Amended on 10/21/2019 by Request #29056**

Lithology:  
DESCRIPTION & COLOR OF FORMATION MATERIAL

Casing:  
BLANK PIPE & WELL SCREEN DATA

Top (ft.)	Bottom (ft.)	Description
<b>0</b>	<b>3</b>	<b>Silty Sand, Brown, Dry</b>
<b>3</b>	<b>5</b>	<b>Silty Clay, grey, damp</b>
<b>5</b>	<b>10</b>	<b>Silty Sand Light Brown, wet</b>

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
<b>No Data</b>			

**IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY**

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Austin, TX 78711  
(512) 334-5540**





	<i>Strata Depth (ft.)</i>	<i>Water Type</i>
Water Quality:	<b>No Data</b>	<b>No Data</b>

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which  
contained injurious constituents?: **No**

**The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Tolunay-Wong Engineers**

**6955 Crestway Rd  
San Antonio, TX 78239**

Driller Name: **Stanley Grover** License Number: **54247**

Comments: **No Data**

**Report Amended on 10/21/2019 by Request #29057**

Lithology:  
DESCRIPTION & COLOR OF FORMATION MATERIAL

Casing:  
BLANK PIPE & WELL SCREEN DATA

<i>Top (ft.)</i>	<i>Bottom (ft.)</i>	<i>Description</i>
<b>0</b>	<b>3</b>	<b>Sand, Brown, Dry</b>
<b>3</b>	<b>5</b>	<b>Silty Clay, grey, damp</b>
<b>5</b>	<b>10</b>	<b>Silty Sand Brown, wet</b>

<i>Dia. (in.)</i>	<i>New/Used</i>	<i>Type</i>	<i>Setting From/To (ft.)</i>
<b>No Data</b>			

**IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY**

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Austin, TX 78711  
(512) 334-5540**





	<i>Strata Depth (ft.)</i>	<i>Water Type</i>
Water Quality:	<b>No Data</b>	<b>No Data</b>

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which  
contained injurious constituents?: **No**

**The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Tolunay-Wong Engineers**

**6955 Crestway Rd  
San Antonio, TX 78239**

Driller Name: **Stanley Grover** License Number: **54247**

Comments: **No Data**

**Report Amended on 10/21/2019 by Request #29058**

Lithology:  
DESCRIPTION & COLOR OF FORMATION MATERIAL

Casing:  
BLANK PIPE & WELL SCREEN DATA

<i>Top (ft.)</i>	<i>Bottom (ft.)</i>	<i>Description</i>
<b>0</b>	<b>3</b>	<b>Silty Sand, Brown, Dry</b>
<b>3</b>	<b>5</b>	<b>Sand, brown, damp</b>
<b>5</b>	<b>10</b>	<b>Sand Brown, wet</b>

<i>Dia. (in.)</i>	<i>New/Used</i>	<i>Type</i>	<i>Setting From/To (ft.)</i>
<b>No Data</b>			

**IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY**

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Austin, TX 78711  
(512) 334-5540**





	<i>Strata Depth (ft.)</i>	<i>Water Type</i>
Water Quality:	<b>No Data</b>	<b>No Data</b>

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which  
contained injurious constituents?: **No**

**The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Tolunay-Wong Engineers**

**6955 Crestway Rd  
San Antonio, TX 78239**

Driller Name: **Stanley Grover** License Number: **54247**

Comments: **No Data**

**Report Amended on 10/21/2019 by Request #29060**

Lithology:  
DESCRIPTION & COLOR OF FORMATION MATERIAL

Casing:  
BLANK PIPE & WELL SCREEN DATA

<i>Top (ft.)</i>	<i>Bottom (ft.)</i>	<i>Description</i>
<b>0</b>	<b>5</b>	<b>Silty Sand, Brown, Dry</b>
<b>5</b>	<b>9</b>	<b>Silty Clay, moist</b>
<b>9</b>	<b>10</b>	<b>Sand Brown, wet</b>

<i>Dia. (in.)</i>	<i>New/Used</i>	<i>Type</i>	<i>Setting From/To (ft.)</i>
<b>No Data</b>			

**IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY**

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Austin, TX 78711  
(512) 334-5540**



## STATE OF TEXAS WELL REPORT for Tracking #524137

Owner: <b>Port of Corpus Christi</b>	Owner Well #: <b>TT-2A-B4</b>
Address: <b>222 Power Street Corpus Christi, TX 78401</b>	Grid #: <b>83-16-2</b>
Well Location: <b>Hwy 364 Aransas Pass, TX 78336</b>	Latitude: <b>27° 50' 43.17" N</b>
Well County: <b>Nueces</b>	Longitude: <b>097° 03' 59.87" W</b>
Number of Wells Drilled: <b>21</b>	Elevation: <b>No Data</b>

Type of Work: <b>New Well</b>	Proposed Use: <b>Environmental Soil Boring</b>
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Drilling Start Date: **9/10/2019**      Drilling End Date: **9/10/2019**

	<i>Diameter (in.)</i>	<i>Top Depth (ft.)</i>	<i>Bottom Depth (ft.)</i>
Borehole:	<b>2</b>	<b>0</b>	<b>10</b>

Drilling Method: **Direct Push**

Borehole Completion: **Plugged**

	<i>Top Depth (ft.)</i>	<i>Bottom Depth (ft.)</i>	<i>Description (number of sacks &amp; material)</i>
Annular Seal Data:	<b>0</b>	<b>2</b>	<b>Concrete 0.25 Bags/Sacks</b>
	<b>2</b>	<b>10</b>	<b>Bentonite 0.5 Bags/Sacks</b>

Seal Method: **Poured**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **No Data**

**Surface Completion NOT by Driller**

Water Level: **8 ft. below land surface on 2019-09-10**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	<i>Strata Depth (ft.)</i>	<i>Water Type</i>
Water Quality:	<b>No Data</b>	<b>No Data</b>

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

**The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Tolunay-Wong Engineers**  
**6955 Crestway Rd**  
**San Antonio, TX 78239**

Driller Name: **Stanley Grover** License Number: **54247**

Comments: **No Data**

**Report Amended on 10/21/2019 by Request #29061**

Lithology:  
DESCRIPTION & COLOR OF FORMATION MATERIAL

Casing:  
BLANK PIPE & WELL SCREEN DATA

Top (ft.)	Bottom (ft.)	Description
<b>0</b>	<b>6</b>	<b>Silty Sand, Brown, Dry</b>
<b>6</b>	<b>10</b>	<b>Sand,light brown,dry-moist</b>

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
<b>No Data</b>			

**IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY**

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**Austin, TX 78711**  
**(512) 334-5540**



	<i>Strata Depth (ft.)</i>	<i>Water Type</i>
Water Quality:	<b>No Data</b>	<b>No Data</b>

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which  
contained injurious constituents?: **No**

**The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Tolunay-Wong Engineers**

**6955 Crestway Rd  
San Antonio, TX 78239**

Driller Name: **Stanley Grover** License Number: **54247**

Comments: **No Data**

**Report Amended on 10/21/2019 by Request #29062**

Lithology:  
DESCRIPTION & COLOR OF FORMATION MATERIAL

Casing:  
BLANK PIPE & WELL SCREEN DATA

Top (ft.)	Bottom (ft.)	Description
<b>0</b>	<b>3</b>	<b>Silty Sand, Brown, Dry</b>
<b>3</b>	<b>8</b>	<b>Sandy Clay, moist</b>
<b>8</b>	<b>10</b>	<b>Sand light brown, wet</b>

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
<b>No Data</b>			

**IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY**

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Please include the report's Tracking Number on your written request.

**Texas Department of Licensing and Regulation  
P.O. Box 12157  
Austin, TX 78711  
(512) 334-5540**





	<i>Strata Depth (ft.)</i>	<i>Water Type</i>
Water Quality:	<b>No Data</b>	<b>No Data</b>

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which  
contained injurious constituents?: **No**

**The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Tolunay-Wong Engineers**

**6955 Crestway Rd  
San Antonio, TX 78239**

Driller Name: **Stanley Grover** License Number: **54247**

Comments: **No Data**

**Report Amended on 10/21/2019 by Request #29063**

Lithology:  
DESCRIPTION & COLOR OF FORMATION MATERIAL

Casing:  
BLANK PIPE & WELL SCREEN DATA

<i>Top (ft.)</i>	<i>Bottom (ft.)</i>	<i>Description</i>
<b>0</b>	<b>3</b>	<b>Silty Sand, Brown, Dry</b>
<b>3</b>	<b>5</b>	<b>Sandy Clay, moist</b>
<b>5</b>	<b>12</b>	<b>Sand, wet</b>

<i>Dia. (in.)</i>	<i>New/Used</i>	<i>Type</i>	<i>Setting From/To (ft.)</i>
<b>No Data</b>			

**IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY**

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Please include the report's Tracking Number on your written request.

**Texas Department of Licensing and Regulation  
P.O. Box 12157  
Austin, TX 78711  
(512) 334-5540**





	<i>Strata Depth (ft.)</i>	<i>Water Type</i>
Water Quality:	<b>No Data</b>	<b>No Data</b>

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which  
contained injurious constituents?: **No**

**The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Tolunay-Wong Engineers**

**6955 Crestway Rd  
San Antonio, TX 78239**

Driller Name: **Stanley Grover** License Number: **54247**

Comments: **No Data**

**Report Amended on 10/21/2019 by Request #29064**

Lithology:  
DESCRIPTION & COLOR OF FORMATION MATERIAL

Casing:  
BLANK PIPE & WELL SCREEN DATA

<i>Top (ft.)</i>	<i>Bottom (ft.)</i>	<i>Description</i>
<b>0</b>	<b>4</b>	<b>Silty Sand, Brown, Dry</b>
<b>4</b>	<b>5</b>	<b>Silty Clay, moist</b>
<b>5</b>	<b>12</b>	<b>Silty Sand, light brown, wet</b>

<i>Dia. (in.)</i>	<i>New/Used</i>	<i>Type</i>	<i>Setting From/To (ft.)</i>
<b>No Data</b>			

**IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY**

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

**Texas Department of Licensing and Regulation  
P.O. Box 12157  
Austin, TX 78711  
(512) 334-5540**





	<i>Strata Depth (ft.)</i>	<i>Water Type</i>
Water Quality:	<b>No Data</b>	<b>No Data</b>

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which  
contained injurious constituents?: **No**

**The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Tolunay-Wong Engineers**

**6955 Crestway Rd  
San Antonio, TX 78239**

Driller Name: **Stanley Grover** License Number: **54247**

Comments: **No Data**

**Report Amended on 10/21/2019 by Request #29065**

Lithology:  
DESCRIPTION & COLOR OF FORMATION MATERIAL

Casing:  
BLANK PIPE & WELL SCREEN DATA

<i>Top (ft.)</i>	<i>Bottom (ft.)</i>	<i>Description</i>
<b>0</b>	<b>5</b>	<b>Silty Sand, Brown, Dry</b>
<b>5</b>	<b>10</b>	<b>Sand, dry-damp, wet at 8.5'</b>

<i>Dia. (in.)</i>	<i>New/Used</i>	<i>Type</i>	<i>Setting From/To (ft.)</i>
<b>No Data</b>			

**IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY**

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

**Texas Department of Licensing and Regulation  
P.O. Box 12157  
Austin, TX 78711  
(512) 334-5540**



	<i>Strata Depth (ft.)</i>	<i>Water Type</i>
Water Quality:	<b>No Data</b>	<b>No Data</b>

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which  
contained injurious constituents?: **No**

**The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Tolunay-Wong Engineers**

**6955 Crestway Rd  
San Antonio, TX 78239**

Driller Name: **Stanley Grover** License Number: **54247**

Comments: **No Data**

**Report Amended on 10/21/2019 by Request #29066**

Lithology:  
DESCRIPTION & COLOR OF FORMATION MATERIAL

Casing:  
BLANK PIPE & WELL SCREEN DATA

<i>Top (ft.)</i>	<i>Bottom (ft.)</i>	<i>Description</i>
<b>0</b>	<b>8</b>	<b>Silty Sand, Brown, Dry</b>
<b>8</b>	<b>10</b>	<b>Sand, wet at 8.5'</b>

<i>Dia. (in.)</i>	<i>New/Used</i>	<i>Type</i>	<i>Setting From/To (ft.)</i>
<b>No Data</b>			

**IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY**

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

**Texas Department of Licensing and Regulation  
P.O. Box 12157  
Austin, TX 78711  
(512) 334-5540**

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**ATTACHMENT 3**  
**LABORATORY ANALYTICAL REPORTS**

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10450 Stancliff Rd. Suite 210  
Houston, TX 77099  
T: +1 281 530 5656  
F: +1 281 530 5887

September 30, 2019

Sam Enis  
SQ Environmental  
PO Box 1991  
Austin, TX 78767

Work Order: **HS19090308**

Laboratory Results for: **Harbor Island 1089.006.001**

Dear Sam,

ALS Environmental received 3 sample(s) on Sep 07, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Dane Wacasey'.

Generated By: DAYNA.FISHER  
Dane J. Wacasey

ALS Houston, US

Date: 30-Sep-19

**Client:** SQ Environmental  
**Project:** Harbor Island 1089.006.001  
**Work Order:** HS19090308

**SAMPLE SUMMARY**

---

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19090308-01	Trip Blank	Water	C&G- 080519-421	06-Sep-2019 08:00	07-Sep-2019 08:00	<input checked="" type="checkbox"/>
HS19090308-02	TT-2A-13(6)	Soil		06-Sep-2019 08:00	07-Sep-2019 08:00	<input type="checkbox"/>
HS19090308-03	TT-2A-13(8)	Soil		06-Sep-2019 08:15	07-Sep-2019 08:00	<input checked="" type="checkbox"/>

ALS Houston, US

Date: 30-Sep-19

---

**Client:** SQ Environmental  
**Project:** Harbor Island 1089.006.001  
**Work Order:** HS19090308

**CASE NARRATIVE**

---

**GC Semivolatiles by Method TX1005**

**Batch ID: 144992**

**Sample ID: HS19090249-01MS**

- MS and MSD are for an unrelated sample

**Sample ID: TT-2A-13(6) (HS19090308-02)**

- The surrogate recoveries could not be determined due to dilution below the calibration range.

---

**WetChemistry by Method SW3550**

**Batch ID: R346654**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

ALS Houston, US

Date: 30-Sep-19

Client: SQ Environmental  
Project: Harbor Island 1089.006.001  
Sample ID: TT-2A-13(6)  
Collection Date: 06-Sep-2019 08:00

**ANALYTICAL REPORT**

WorkOrder:HS19090308  
Lab ID:HS19090308-02  
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>TEXAS TPH BY TX1005</b>		<b>Method:TX1005</b>			Prep:TX1005PR / 09-Sep-2019		Analyst: MBG
nC6 to nC12	4,100	J	740	5000	mg/Kg-dry	100	10-Sep-2019 15:27
>nC12 to nC28	21,000		970	5000	mg/Kg-dry	100	10-Sep-2019 15:27
>nC28 to nC35		U	970	5000	mg/Kg-dry	100	10-Sep-2019 15:27
<b>Total Petroleum Hydrocarbon</b>	<b>25,100</b>		<b>740</b>	<b>5000</b>	<b>mg/Kg-dry</b>	100	10-Sep-2019 15:27
Surr: 2-Fluorobiphenyl	0	S		70-130	%REC	100	10-Sep-2019 15:27
Surr: Trifluoromethyl benzene	0	S		70-130	%REC	100	10-Sep-2019 15:27
<b>MOISTURE</b>		<b>Method:SW3550</b>					Analyst: DFF
Percent Moisture	12.2		0.0100	0.0100	wt%	1	20-Sep-2019 09:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**WEIGHT LOG**

**Client:** SQ Environmental  
**Project:** Harbor Island 1089.006.001  
**WorkOrder:** HS19090308

**Batch ID:** 3328      **Method:** VOLATILES BY SW8260C

SampID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS19090308-02	2	4.97 (g)	5 (mL)	1.01	TerraCore (5035A)

**Batch ID:** 144992      **Method:** TEXAS TPH BY TX1005      **Prep:** TX 1005\_S PR

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19090308-02	1	11.48	10 (mL)	0.8711

**Batch ID:** 145427      **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D      **Prep:** 3541\_B\_LOW

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19090308-02	1	30.08	1 (mL)	0.03324

ALS Houston, US

Date: 30-Sep-19

**Client:** SQ Environmental  
**Project:** Harbor Island 1089.006.001  
**WorkOrder:** HS19090308

**DATES REPORT**

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
<b>Batch ID:</b> 144992 ( 0 )		<b>Test Name :</b> TEXAS TPH BY TX1005			<b>Matrix:</b> Soil	
HS19090308-02	TT-2A-13(6)	06 Sep 2019 08:00		09 Sep 2019 10:00	10 Sep 2019 15:27	100
<b>Batch ID:</b> 145427 ( 0 )		<b>Test Name :</b> LOW-LEVEL SEMIVOLATILES BY 8270D			<b>Matrix:</b> Soil	
HS19090308-02	TT-2A-13(6)	06 Sep 2019 08:00		19 Sep 2019 10:23	19 Sep 2019 21:09	10
<b>Batch ID:</b> R346527 ( 0 )		<b>Test Name :</b> VOLATILES BY SW8260C			<b>Matrix:</b> Soil	
HS19090308-02	TT-2A-13(6)	06 Sep 2019 08:00			19 Sep 2019 19:33	1
<b>Batch ID:</b> R346654 ( 0 )		<b>Test Name :</b> MOISTURE			<b>Matrix:</b> Soil	
HS19090308-02	TT-2A-13(6)	06 Sep 2019 08:00			20 Sep 2019 09:54	1

ALS Houston, US

Date: 30-Sep-19

**Client:** SQ Environmental  
**Project:** Harbor Island 1089.006.001  
**WorkOrder:** HS19090308

**QC BATCH REPORT**

Batch ID: 144992 ( 0 )		Instrument: FID-10		Method: TEXAS TPH BY TX1005						
<b>MBLK</b>	Sample ID: <b>MBLK-144992</b>	Units: <b>mg/Kg</b>			Analysis Date: <b>09-Sep-2019 23:12</b>					
Client ID:	Run ID: <b>FID-10_346031</b>	SeqNo: <b>5247591</b>		PrepDate: <b>09-Sep-2019</b>		DF: <b>1</b>				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
nC6 to nC12	U	50								
>nC12 to nC28	U	50								
>nC28 to nC35	U	50								
Total Petroleum Hydrocarbon	U	50								
<i>Surr: 2-Fluorobiphenyl</i>	20.52	0	25	0	82.1	70 - 130				
<i>Surr: Trifluoromethyl benzene</i>	18.92	0	25	0	75.7	70 - 130				
<b>LCS</b>	Sample ID: <b>LCS-144992</b>	Units: <b>mg/Kg</b>			Analysis Date: <b>09-Sep-2019 23:41</b>					
Client ID:	Run ID: <b>FID-10_346031</b>	SeqNo: <b>5247592</b>		PrepDate: <b>09-Sep-2019</b>		DF: <b>1</b>				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
nC6 to nC12	193.1	50	250	0	77.2	75 - 125				
>nC12 to nC28	193.6	50	250	0	77.4	75 - 125				
<i>Surr: 2-Fluorobiphenyl</i>	21.97	0	25	0	87.9	70 - 130				
<i>Surr: Trifluoromethyl benzene</i>	20.01	0	25	0	80.0	70 - 130				
<b>LCSD</b>	Sample ID: <b>LCSD-144992</b>	Units: <b>mg/Kg</b>			Analysis Date: <b>10-Sep-2019 00:10</b>					
Client ID:	Run ID: <b>FID-10_346031</b>	SeqNo: <b>5247593</b>		PrepDate: <b>09-Sep-2019</b>		DF: <b>1</b>				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
nC6 to nC12	196.1	50	250	0	78.5	75 - 125	193.1	1.55	20	
>nC12 to nC28	189.8	50	250	0	75.9	75 - 125	193.6	1.96	20	
<i>Surr: 2-Fluorobiphenyl</i>	22.69	0	25	0	90.8	70 - 130	21.97	3.24	20	
<i>Surr: Trifluoromethyl benzene</i>	19.78	0	25	0	79.1	70 - 130	20.01	1.12	20	
<b>MS</b>	Sample ID: <b>HS19090249-01MS</b>	Units: <b>mg/Kg</b>			Analysis Date: <b>10-Sep-2019 01:08</b>					
Client ID:	Run ID: <b>FID-10_346031</b>	SeqNo: <b>5247595</b>		PrepDate: <b>09-Sep-2019</b>		DF: <b>1</b>				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
nC6 to nC12	169	47	236.7	4.302	69.6	75 - 125			S	
>nC12 to nC28	106.7	47	236.7	6.78	42.2	75 - 125			S	
<i>Surr: 2-Fluorobiphenyl</i>	17.06	0	23.67	0	72.1	70 - 130				
<i>Surr: Trifluoromethyl benzene</i>	16.85	0	23.67	0	71.2	70 - 130				

ALS Houston, US

Date: 30-Sep-19

**Client:** SQ Environmental  
**Project:** Harbor Island 1089.006.001  
**WorkOrder:** HS19090308

**QC BATCH REPORT**

<b>Batch ID:</b> 144992 ( 0 )	<b>Instrument:</b> FID-10	<b>Method:</b> TEXAS TPH BY TX1005
-------------------------------	---------------------------	------------------------------------

<b>MSD</b>	Sample ID: <b>HS19090249-01MSD</b>	Units: <b>mg/Kg</b>	Analysis Date: <b>10-Sep-2019 01:37</b>							
Client ID:	Run ID: <b>FID-10_346031</b>	SeqNo: <b>5247596</b>	PrepDate: <b>09-Sep-2019</b> DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	202.2	48	241.5	4.302	81.9	75 - 125	169	17.9	20	
>nC12 to nC28	141.7	48	241.5	6.78	55.9	75 - 125	106.7	28.2	20	SR
<i>Surr: 2-Fluorobiphenyl</i>	18.44	0	24.15	0	76.3	70 - 130	17.06	7.78	20	
<i>Surr: Trifluoromethyl benzene</i>	18.2	0	24.15	0	75.3	70 - 130	16.85	7.7	20	

The following samples were analyzed in this batch: HS19090308-02

ALS Houston, US

Date: 30-Sep-19

**Client:** SQ Environmental  
**Project:** Harbor Island 1089.006.001  
**WorkOrder:** HS19090308

**QC BATCH REPORT**

Batch ID: R346654 ( 0 )		Instrument: Balance1		Method: MOISTURE					
<b>DUP</b>	Sample ID: <b>HS19090308-02DUP</b>	Units: wt%		Analysis Date: <b>20-Sep-2019 09:54</b>					
Client ID: <b>TT-2A-13(6)</b>	Run ID: <b>Balance1_346654</b>	SeqNo: <b>5261687</b>		PrepDate:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Percent Moisture	12.7	0.0100					12.2	4.02	20

The following samples were analyzed in this batch: HS19090308-02

**ALS Houston, US**

Date: 30-Sep-19

**Client:** SQ Environmental  
**Project:** Harbor Island 1089.006.001  
**WorkOrder:** **HS19090308**

**QUALIFIERS,  
ACRONYMS, UNITS**

<b>Qualifier</b>	<b>Description</b>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

<b>Acronym</b>	<b>Description</b>
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

<b>Unit Reported</b>	<b>Description</b>
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

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**CERTIFICATIONS,ACCREDITATIONS & LICENSES**

<b>Agency</b>	<b>Number</b>	<b>Expire Date</b>
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-141	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

**ALS Houston, US**

Date: 30-Sep-19

**Sample Receipt Checklist**

Client Name: SQ ENVIRONMENTAL TX  
Work Order: HS19090308

Date/Time Received: **07-Sep-2019 08:00**  
Received by: **DDG**

Checklist completed by: Asad Chaudhry 7-Sep-2019  
eSignature Date

Reviewed by: Dane J. Wacasey 10-Sep-2019  
eSignature Date

Matrices: **Soil, Water**

Carrier name: **Greyhound**

- |   |   |                             |   |
|---|---|-----------------------------|---|
| Shipping container/cooler in good condition?            | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/>            |
| Custody seals intact on shipping container/cooler?      | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/>            |
| Custody seals intact on sample bottles?                 | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| VOA/TX1005/TX1006 Solids in hermetically sealed vials?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/>            |
| Chain of custody present?                               | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | 1 Page(s)                                       |
| Chain of custody signed when relinquished and received? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | COC IDs:190852                                  |
| Samplers name present on COC?                           | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| Chain of custody agrees with sample labels?             | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| Samples in proper container/bottle?                     | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| Sample containers intact?                               | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| Sufficient sample volume for indicated test?            | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| All samples received within holding time?               | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| Container/Temp Blank temperature in compliance?         | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |

Temperature(s)/Thermometer(s):	0.9c C/UC	IR 25
Cooler(s)/Kit(s):	44483	
Date/Time sample(s) sent to storage:	09/07/2019 16:00	

- |  |   |                             |   |
|--|---|-----------------------------|---|
| Water - VOA vials have zero headspace? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | No VOA vials submitted <input type="checkbox"/> |
| Water - pH acceptable upon receipt?    | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | N/A <input checked="" type="checkbox"/>         |
| pH adjusted?                           | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | N/A <input checked="" type="checkbox"/>         |

pH adjusted by:

Login Notes:

Client Contacted: \_\_\_\_\_ Date Contacted: \_\_\_\_\_ Person Contacted: \_\_\_\_\_

Contacted By: \_\_\_\_\_ Regarding: \_\_\_\_\_

Comments:

Corrective Action:



Cincinnati, OH  
+1 513 733 5336

Everett, WA  
+1 425 356 2600

Fort Collins, CO  
+1 970 490 1511

Holland, MI  
+1 616 399 6070

# Chain of Custody Form

Page      of     

COC ID: **190852**

**HS19090308** Attachment A

Page 117 of 166

SQ Environmental

Harbor Island 1089.006.001



Customer Information		Project Information		ALS Project Manager:	
Purchase Order	1039.006.001	Project Name	Harbor Island 1089.006.001	A	#260_S (*5035* 8260 TCL 4.3 VOC)
Work Order		Project Number	1039.006.001	B	TX1005_S_REV3 (*5035* TX1005 TPH)
Company Name	SQ Environmental	Bill To Company	SQ Environmental	C	<del>8270_LOW_S (8270 SVOC TCL 4.3)</del>
Send Report To	Sam Enis	Invoice Attn	Accounts Payable	D	<del>RCRA B Soil (SW6020747) RCRA B Metals)</del>
Address	PO Box 1991	Address	PO Box 1991	E	MOIST_SW3550 (Moist%)
City/State/Zip	Austin, TX 78767	City/State/Zip	Austin TX 78767	F	<del>8260_LL_W (SW6260 VOC-TCL 4.3)</del>
Phone	(281) 413-4266	Phone	(281) 413-4266	G	
Fax		Fax		H	
e-Mail Address	s.enis@sqenv.com	e-Mail Address	accounting@sqenv.com	I	
				J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Trip Blank			Water	1,8	2											
2	TT-2A-13(6)	9-6-19	8:00	Soil	7,8,9	7	Ⓢ	X	Ⓢ	Ⓢ	Ⓢ						
3	TT-2A-13(8)		8:15	L	L	7											X
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign <i>Sam Enis</i>		Shipment Method		Required Turnaround Time: (Check Box) <input checked="" type="checkbox"/> 10 Wk Days <input type="checkbox"/> 5 Wk Days <input checked="" type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour		Results Due Date:	
Relinquished by: <i>Sam Enis</i>	Date: 9-6-19	Time:	Received by: <i>Bojana Greca</i>	Date: 9-6-19	Time: 5:45pm	Notes: Harbor Island 1089.006.001 - RUSU-481K	
Relinquished by: <i>Bojana Greca</i>	Date: 9-6-19	Time:	Received by (Laboratory): <i>D.G. 7919</i>	Date: 09/07/19	Time: 08:00	Cooler ID: 44483	Cooler Temp: 0.9
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	Date:	Time:	QC Package: (Check One Box Below)	
Preservative Key: 1-HCl 2-HNO <sub>3</sub> 3-H <sub>2</sub> SO <sub>4</sub> 4-NaOH 5-Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> 6-NaHSO <sub>4</sub> 7-Other 8-4°C 9-5035						<input checked="" type="checkbox"/> Level II Std QC	<input type="checkbox"/> RFP Checklist
						<input type="checkbox"/> Level III Std QC/Raw Data	<input type="checkbox"/> RFP Level IV
						<input type="checkbox"/> Level IV SW846/CLP	<input type="checkbox"/> Other

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.  
 2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.  
 3. The Chain of Custody is a legal document. All information must be completed accurately.

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 <b>ALS</b> 10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5887	44483	<b>CUSTODY SEAL</b>		Seal Broken By:
		Date: 9-6-19	Time: 4:45 PM	AC
		Name: Mike Haines		Date: 9/7/19
		Company: ALS		

06SEP19 07:07P                    \*\* LABEL \*\*  
Schd: VLP 0854                    GLI 3087420700  
HOUSTON, TX                      
ALS GROUP USA CORP  
281-530-5656  
ALS  
10450 STAN CLIFF #210                    Manual Wght: 45.3  
HOUSTON, TX 77099                    Tariff Wght: 46.0  
Phone: 222-222-2222                    PO/Ref #:  
Priority  
Agency Phone: (713)759-6550                    WWW.SHIPGREYHOUND.COM



# Environment Testing TestAmerica

## ANALYTICAL REPORT

Eurofins TestAmerica, Corpus Christi  
1733 N. Padre Island Drive  
Corpus Christi, TX 78408  
Tel: (361)289-2673

Laboratory Job ID: 560-82178-1  
Client Project/Site: Harbor Island

For:  
SQ Environmental, LLC  
PO BOX 1991  
Austin, Texas 78767

Attn: Sam Enis

Authorized for release by:  
9/11/2019 8:28:01 AM

Jodi Allen, Project Manager I  
(713)690-4444  
[jodi.allen@testamericainc.com](mailto:jodi.allen@testamericainc.com)



### LINKS

Review your project  
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[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Definitions/Glossary

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82178-1

## Qualifiers

### GC Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

## Case Narrative

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82178-1

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**Job ID: 560-82178-1**

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**Laboratory: Eurofins TestAmerica, Corpus Christi**

### Narrative

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**Job Narrative  
560-82178-1**

#### Comments

No additional comments.

#### Receipt

The samples were received on 9/10/2019 3:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 5.7° C and 5.8° C.

#### Receipt Exceptions

A trip blank was submitted for analysis with these samples; however, it was not listed on the Chain of Custody (COC).

The following samples were listed on the Chain of Custody (COC) as duplications: TT-2E-4 (Duplicated w/#20) (560-82178-1), TT-1B-16 (8) (Duplicated #2) (560-82178-18) and TT- B-16(10) (Duplicated #21) (560-82178-19). The sample collected as TT-2E-4 (10) not listed on the COC was determined to be mislabeled and should have reflected TT-1B-16(10) it has been corrected in the login at the client's request. The client was notified and submitted a revised COC included in this final report.

On 09/10/19 the client requested we hold the TPH analysis on the following sample:TT-2B-4(6) (560-82178-9).

#### GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Lab Admin

2 duplicated samples on the COC.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Detection Summary

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82178-1

## Client Sample ID: TT-1B-16 (8)

## Lab Sample ID: 560-82178-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Over C12-C28	48000		5500	1100	mg/Kg	100		TX 1005	Total/NA
Over C28-C35	7900		5500	1100	mg/Kg	100		TX 1005	Total/NA
C6-C12	2300	J	5500	1100	mg/Kg	100		TX 1005	Total/NA
C6-C35	58000		5500	1100	mg/Kg	100		TX 1005	Total/NA

## Client Sample ID: TT-2A-14 (8)

## Lab Sample ID: 560-82178-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Over C12-C28	2100		250	51	mg/Kg	5		TX 1005	Total/NA
Over C28-C35	290		250	51	mg/Kg	5		TX 1005	Total/NA
C6-C12	57	J	250	51	mg/Kg	5		TX 1005	Total/NA
C6-C35	2400		250	51	mg/Kg	5		TX 1005	Total/NA

## Client Sample ID: TT-2A-SB27 (6-8)

## Lab Sample ID: 560-82178-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Over C12-C28	2300		470	94	mg/Kg	10		TX 1005	Total/NA
Over C28-C35	380	J	470	94	mg/Kg	10		TX 1005	Total/NA
C6-C35	2700		470	94	mg/Kg	10		TX 1005	Total/NA

## Client Sample ID: TT-2A-Slab(10)

## Lab Sample ID: 560-82178-7

No Detections.

## Client Sample ID: TT-5A-5A (8)

## Lab Sample ID: 560-82178-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Over C12-C28	1400		230	45	mg/Kg	5		TX 1005	Total/NA
Over C28-C35	160	J	230	45	mg/Kg	5		TX 1005	Total/NA
C6-C12	120	J	230	45	mg/Kg	5		TX 1005	Total/NA
C6-C35	1700		230	45	mg/Kg	5		TX 1005	Total/NA

## Client Sample ID: TT-1A-10 (8)

## Lab Sample ID: 560-82178-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Over C12-C28	2200		250	50	mg/Kg	5		TX 1005	Total/NA
Over C28-C35	540		250	50	mg/Kg	5		TX 1005	Total/NA
C6-C35	2700		250	50	mg/Kg	5		TX 1005	Total/NA

## Client Sample ID: TT-1A-NE-7A (4)

## Lab Sample ID: 560-82178-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Over C12-C28	84		54	11	mg/Kg	1		TX 1005	Total/NA
Over C28-C35	80		54	11	mg/Kg	1		TX 1005	Total/NA
C6-C35	160		54	11	mg/Kg	1		TX 1005	Total/NA

## Client Sample ID: SWW-2A (6)

## Lab Sample ID: 560-82178-15

No Detections.

## Client Sample ID: SWW-1A (6)

## Lab Sample ID: 560-82178-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Over C12-C28	9700		1800	360	mg/Kg	40		TX 1005	Total/NA
Over C28-C35	1500	J	1800	360	mg/Kg	40		TX 1005	Total/NA

This Detection Summary does not include radiochemical test results.

# Detection Summary

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82178-1

## Client Sample ID: SWW-1A (6) (Continued)

Lab Sample ID: 560-82178-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
C6-C35	11000		1800	360	mg/Kg	40		TX 1005	Total/NA

## Client Sample ID: TT-2E-4 (8)

Lab Sample ID: 560-82178-20

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Over C12-C28	9.6	J	46	9.1	mg/Kg	1		TX 1005	Total/NA
C6-C35	9.6	J	46	9.1	mg/Kg	1		TX 1005	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Corpus Christi



## Client Sample Results

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82178-1

### Client Sample ID: TT-1B-16 (8)

Date Collected: 09/10/19 11:55

Date Received: 09/10/19 15:05

### Lab Sample ID: 560-82178-2

Matrix: Solid

#### Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Over C12-C28	48000		5500	1100	mg/Kg		09/10/19 15:15	09/11/19 06:59	100
Over C28-C35	7900		5500	1100	mg/Kg		09/10/19 15:15	09/11/19 06:59	100
C6-C12	2300	J	5500	1100	mg/Kg		09/10/19 15:15	09/11/19 06:59	100
C6-C35	58000		5500	1100	mg/Kg		09/10/19 15:15	09/11/19 06:59	100

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	87		70 - 130	09/10/19 15:15	09/11/19 06:59	100
1-Chlorooctane (Surr)	115		70 - 130	09/10/19 15:15	09/11/19 06:59	100

### Client Sample ID: TT-2A-14 (8)

Date Collected: 09/10/19 07:20

Date Received: 09/10/19 15:05

### Lab Sample ID: 560-82178-3

Matrix: Solid

#### Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Over C12-C28	2100		250	51	mg/Kg		09/10/19 15:15	09/11/19 05:55	5
Over C28-C35	290		250	51	mg/Kg		09/10/19 15:15	09/11/19 05:55	5
C6-C12	57	J	250	51	mg/Kg		09/10/19 15:15	09/11/19 05:55	5
C6-C35	2400		250	51	mg/Kg		09/10/19 15:15	09/11/19 05:55	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	88		70 - 130	09/10/19 15:15	09/11/19 05:55	5
1-Chlorooctane (Surr)	91		70 - 130	09/10/19 15:15	09/11/19 05:55	5

### Client Sample ID: TT-2A-SB27 (6-8)

Date Collected: 09/10/19 07:40

Date Received: 09/10/19 15:05

### Lab Sample ID: 560-82178-5

Matrix: Solid

#### Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Over C12-C28	2300		470	94	mg/Kg		09/10/19 15:15	09/11/19 06:22	10
Over C28-C35	380	J	470	94	mg/Kg		09/10/19 15:15	09/11/19 06:22	10
C6-C12	ND		470	94	mg/Kg		09/10/19 15:15	09/11/19 06:22	10
C6-C35	2700		470	94	mg/Kg		09/10/19 15:15	09/11/19 06:22	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	81		70 - 130	09/10/19 15:15	09/11/19 06:22	10
1-Chlorooctane (Surr)	87		70 - 130	09/10/19 15:15	09/11/19 06:22	10

### Client Sample ID: TT-2A-Slab(10)

Date Collected: 09/10/19 08:00

Date Received: 09/10/19 15:05

### Lab Sample ID: 560-82178-7

Matrix: Solid

#### Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Over C12-C28	ND		48	9.5	mg/Kg		09/10/19 15:15	09/11/19 04:51	1
Over C28-C35	ND		48	9.5	mg/Kg		09/10/19 15:15	09/11/19 04:51	1
C6-C12	ND		48	9.5	mg/Kg		09/10/19 15:15	09/11/19 04:51	1
C6-C35	ND		48	9.5	mg/Kg		09/10/19 15:15	09/11/19 04:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	79		70 - 130	09/10/19 15:15	09/11/19 04:51	1

Eurofins TestAmerica, Corpus Christi

# Client Sample Results

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82178-1

## Client Sample ID: TT-2A-Slab(10)

Date Collected: 09/10/19 08:00

Date Received: 09/10/19 15:05

## Lab Sample ID: 560-82178-7

Matrix: Solid

### Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane (Surr)	89		70 - 130	09/10/19 15:15	09/11/19 04:51	1

## Client Sample ID: TT-5A-5A (8)

Date Collected: 09/10/19 08:40

Date Received: 09/10/19 15:05

## Lab Sample ID: 560-82178-10

Matrix: Solid

### Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Over C12-C28	1400		230	45	mg/Kg		09/10/19 15:15	09/11/19 06:31	5
Over C28-C35	160	J	230	45	mg/Kg		09/10/19 15:15	09/11/19 06:31	5
C6-C12	120	J	230	45	mg/Kg		09/10/19 15:15	09/11/19 06:31	5
C6-C35	1700		230	45	mg/Kg		09/10/19 15:15	09/11/19 06:31	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	81		70 - 130	09/10/19 15:15	09/11/19 06:31	5
1-Chlorooctane (Surr)	90		70 - 130	09/10/19 15:15	09/11/19 06:31	5

## Client Sample ID: TT-1A-10 (8)

Date Collected: 09/10/19 09:00

Date Received: 09/10/19 15:05

## Lab Sample ID: 560-82178-12

Matrix: Solid

### Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Over C12-C28	2200		250	50	mg/Kg		09/10/19 15:15	09/11/19 05:09	5
Over C28-C35	540		250	50	mg/Kg		09/10/19 15:15	09/11/19 05:09	5
C6-C12	ND		250	50	mg/Kg		09/10/19 15:15	09/11/19 05:09	5
C6-C35	2700		250	50	mg/Kg		09/10/19 15:15	09/11/19 05:09	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	85		70 - 130	09/10/19 15:15	09/11/19 05:09	5
1-Chlorooctane (Surr)	86		70 - 130	09/10/19 15:15	09/11/19 05:09	5

## Client Sample ID: TT-1A-NE-7A (4)

Date Collected: 09/10/19 10:15

Date Received: 09/10/19 15:05

## Lab Sample ID: 560-82178-14

Matrix: Solid

### Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Over C12-C28	84		54	11	mg/Kg		09/10/19 15:15	09/11/19 05:18	1
Over C28-C35	80		54	11	mg/Kg		09/10/19 15:15	09/11/19 05:18	1
C6-C12	ND		54	11	mg/Kg		09/10/19 15:15	09/11/19 05:18	1
C6-C35	160		54	11	mg/Kg		09/10/19 15:15	09/11/19 05:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	96		70 - 130	09/10/19 15:15	09/11/19 05:18	1
1-Chlorooctane (Surr)	93		70 - 130	09/10/19 15:15	09/11/19 05:18	1

## Client Sample Results

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82178-1

### Client Sample ID: SWW-2A (6)

Date Collected: 09/10/19 10:50

Date Received: 09/10/19 15:05

Lab Sample ID: 560-82178-15

Matrix: Solid

#### Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Over C12-C28	ND		44	8.9	mg/Kg		09/10/19 15:15	09/11/19 05:28	1
Over C28-C35	ND		44	8.9	mg/Kg		09/10/19 15:15	09/11/19 05:28	1
C6-C12	ND		44	8.9	mg/Kg		09/10/19 15:15	09/11/19 05:28	1
C6-C35	ND		44	8.9	mg/Kg		09/10/19 15:15	09/11/19 05:28	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	89		70 - 130				09/10/19 15:15	09/11/19 05:28	1
1-Chlorooctane (Surr)	91		70 - 130				09/10/19 15:15	09/11/19 05:28	1

### Client Sample ID: SWW-1A (6)

Date Collected: 09/10/19 11:10

Date Received: 09/10/19 15:05

Lab Sample ID: 560-82178-16

Matrix: Solid

#### Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Over C12-C28	9700		1800	360	mg/Kg		09/10/19 15:15	09/11/19 05:37	40
Over C28-C35	1500	J	1800	360	mg/Kg		09/10/19 15:15	09/11/19 05:37	40
C6-C12	ND		1800	360	mg/Kg		09/10/19 15:15	09/11/19 05:37	40
C6-C35	11000		1800	360	mg/Kg		09/10/19 15:15	09/11/19 05:37	40
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	84		70 - 130				09/10/19 15:15	09/11/19 05:37	40
1-Chlorooctane (Surr)	84		70 - 130				09/10/19 15:15	09/11/19 05:37	40

### Client Sample ID: TT-2E-4 (8)

Date Collected: 09/10/19 12:15

Date Received: 09/10/19 15:05

Lab Sample ID: 560-82178-20

Matrix: Solid

#### Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Over C12-C28	9.6	J	46	9.1	mg/Kg		09/10/19 15:15	09/11/19 05:46	1
Over C28-C35	ND		46	9.1	mg/Kg		09/10/19 15:15	09/11/19 05:46	1
C6-C12	ND		46	9.1	mg/Kg		09/10/19 15:15	09/11/19 05:46	1
C6-C35	9.6	J	46	9.1	mg/Kg		09/10/19 15:15	09/11/19 05:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	86		70 - 130				09/10/19 15:15	09/11/19 05:46	1
1-Chlorooctane (Surr)	91		70 - 130				09/10/19 15:15	09/11/19 05:46	1

### QC Sample Results

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82178-1

#### Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Lab Sample ID: MB 560-166722/1-A  
Matrix: Solid  
Analysis Batch: 166726

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 166722

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Over C12-C28	ND		50	10	mg/Kg		09/10/19 16:01	09/11/19 04:06	1
Over C28-C35	ND		50	10	mg/Kg		09/10/19 16:01	09/11/19 04:06	1
C6-C12	ND		50	10	mg/Kg		09/10/19 16:01	09/11/19 04:06	1
C6-C35	ND		50	10	mg/Kg		09/10/19 16:01	09/11/19 04:06	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	101		70 - 130	09/10/19 16:01	09/11/19 04:06	1
1-Chlorooctane (Surr)	111		70 - 130	09/10/19 16:01	09/11/19 04:06	1

Lab Sample ID: LCS 560-166722/2-A  
Matrix: Solid  
Analysis Batch: 166726

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 166722

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
C6-C35	250	244		mg/Kg		98	75 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
<i>o</i> -Terphenyl	88		70 - 130
1-Chlorooctane (Surr)	101		70 - 130

Lab Sample ID: LCSD 560-166722/3-A  
Matrix: Solid  
Analysis Batch: 166726

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total/NA  
Prep Batch: 166722

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
C6-C35	250	256		mg/Kg		102	75 - 125	5	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
<i>o</i> -Terphenyl	95		70 - 130
1-Chlorooctane (Surr)	105		70 - 130

## Accreditation/Certification Summary

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82178-1

### Laboratory: Eurofins TestAmerica, Corpus Christi

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704210-19-23	03-31-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
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# Method Summary

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82178-1

Method	Method Description	Protocol	Laboratory
TX 1005	Texas - Total Petroleum Hydrocarbon (GC)	TCEQ	TAL CC
5035A	Closed System Purge & Trap	SW846	TAL CC
TX_1005_S_Prep	Extraction - Texas Total petroleum Hyrdocarbons	TCEQ	TAL CC

**Protocol References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TCEQ = Texas Commission of Environmental Quality

**Laboratory References:**

TAL CC = Eurofins TestAmerica, Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673



# Sample Summary

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82178-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
560-82178-2	TT-1B-16 (8)	Solid	09/10/19 11:55	09/10/19 15:05	
560-82178-3	TT-2A-14 (8)	Solid	09/10/19 07:20	09/10/19 15:05	
560-82178-5	TT-2A-SB27 (6-8)	Solid	09/10/19 07:40	09/10/19 15:05	
560-82178-7	TT-2A-Slab(10)	Solid	09/10/19 08:00	09/10/19 15:05	
560-82178-10	TT-5A-5A (8)	Solid	09/10/19 08:40	09/10/19 15:05	
560-82178-12	TT-1A-10 (8)	Solid	09/10/19 09:00	09/10/19 15:05	
560-82178-14	TT-1A-NE-7A (4)	Solid	09/10/19 10:15	09/10/19 15:05	
560-82178-15	SWW-2A (6)	Solid	09/10/19 10:50	09/10/19 15:05	
560-82178-16	SWW-1A (6)	Solid	09/10/19 11:10	09/10/19 15:05	
560-82178-20	TT-2E-4 (8)	Solid	09/10/19 12:15	09/10/19 15:05	



# Chain of Custody Record

<b>Client Information</b> Client Contact: Sam Enis Company: SQ Environmental, LLC Address: PO BOX 1991 City: Austin State, Zip: TX, 78767 Phone: 512-574-1199 (Tel) Email: s.enis@sqenv.com Project Name: Harbor Island Site:		Lab PM: Allen, Jodi L E-Mail: jodi.allen@testamericainc.com Due Date Requested: TAT Requested (days): 24 PO #: Purchase Order Requested W/O #: Project #: 56007805 SSOW#:		Carner Tracking No(s): 560-30141-4861.2 Page: Page of: Job: Loc: 560 82178	
<b>Analysis Requested</b> TX1005/5035 - TPH TX1006/5035 - TPH (ON HOLD) 8260805035 - TCL Volatiles TX - (ON HOLD) 8270C/3546 - TCL SVOC (ON HOLD) 6010B/7471 - RCRA 8 Metals (ON HOLD)		Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> Perform MCFSD (Yes or No) <input checked="" type="checkbox"/> Total Number of Containers:		Special Instructions/Note: 560-82178 Chain of Custody	
<b>Sample Identification</b> TT-ZE-4 TT-1B-16 (8) TT-2A-14 (8) TT-2A-14 (10) TT-2A-5B27 (6-8) TT-2A-5B27 (10) TT-2A-5A (10) TT-2A-5A (12) TT-2B-4 (6) TT-5A-5A (8) TT-5A-5A (16)		Matrix (W=water, S=solid, O=wasteoil, ST=fr. use, A=air) Sample Type (C=Comp, G=grab) Preservation Code: Sample Date Sample Time Sample Date Sample Time		Special Instructions/Note: 560-82178 Chain of Custody	
<b>Possible Hazard Identification</b> <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Deliverable Requested: I, II, III, IV, Other (specify)		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
Empty Kit Relinquished by: <i>Harbor Island</i> Relinquished by: <i>Sam Enis</i> Relinquished by: <i>Sam Enis</i>		Date: 9/10/19 @ 1415 Date: 9/10/19 15:00 Date: 9/10/19 15:00		Method of Shipment: Received by: <i>Sam Enis</i> Received by: <i>Sam Enis</i> Received by: <i>Sam Enis</i>	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 5.7/5.8 J=10		Ver: 01/16/2019	





# Chain of Custody Record

Client Information		Sampler:		Carrier Tracking No(s):		COC No:							
Client Contact: Sam Enis		Lab PM: Allen, Jodi L		560-30141-4861.2		Page 1 of 2							
Company: SQ Environmental, LLC		E-Mail: jodi.allen@testamericainc.com		Job #:		Job #:							
Address: PO BOX 1991 Austin TX, 78767		Due Date Requested:		Analysis Requested		Preservation Codes:							
City:		TAT Requested (days):		TX1005/5035 - TPH		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Arsenic Acid H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:							
State, Zip:		Purchase Order Requested		TX1006/5035 - TPH (ON HOLD)		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)							
Phone:		WO #:		8270C/3546 - TCL SVOC (ON HOLD)		Total Number of containers							
512-574-1199(Tel)				8260B05035 - TCL Volatiles TX - (ON HOLD)		Special Instructions/Note:							
Email:		Project #:		6010B/7471 - RCRA 8 Metals (ON HOLD)									
s.enis@sqenv.com		56007805											
Project Name:		SSOW#:											
Harbor Island													
Site:													
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=soil, T=tissue, A=air)	Field Filled Sample (Yes or No)	Perform MS/MSD (Yes or No)	TX1005/5035 - TPH	TX1006/5035 - TPH (ON HOLD)	8260B05035 - TCL Volatiles TX - (ON HOLD)	8270C/3546 - TCL SVOC (ON HOLD)	6010B/7471 - RCRA 8 Metals (ON HOLD)	Total Number of containers	Special Instructions/Note:
TT-2E-4 (8)	9/10/19	1215	G	Solid	X	X							
TT-2A-14 (8)		0720		Solid	X	X							
TT-2A-14 (10)		0725		Solid	X	X							
TT-2A-5B27 (6-8)		0740		Solid	X	X							
TT-2A-5B27 (10)		0745		Solid	X	X							
TT-2A-5196 (10)		0800		Solid	X	X							
TT-2A-5196 (12)		0810		Solid	X	X							
TT-2B-4 (6)		0820		Solid	X	X							
TT-5A-5A (8)		0840		Solid	X	X							
TT-5A-5A (10)		0845		Solid	X	X							

**Possible Hazard Identification**  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown  Radiological

**Deliverable Requested:** I, II, III, IV, Other (specify)

**Empty Kit Relinquished by:** \_\_\_\_\_ Date: \_\_\_\_\_

**Relinquished by:** *Sam Enis* Date/Time: 9/10/19 @ 1415 Company

**Relinquished by:** \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company

**Relinquished by:** \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company

**Custody Seals Intact:**  Yes  No  Δ  No  Δ  No

**Custody Seal No.:** \_\_\_\_\_

**Method of Shipment:** \_\_\_\_\_

**Received by:** \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company

**Received by:** \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company

**Received by:** \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company

**Cooler Temperature(s) °C and Other Remarks:** \_\_\_\_\_

Ver: 01/16/2019

# Chain of Custody Record

<b>Client Information</b>		Sampler: Lab PM: Allen, Jodi L		Carrier Tracking No(s):		COC No: 560-30141-4861.2	
Client Contact: Sam Enis		Phone: E-Mail: jodi.allen@testamericainc.com		Page: 2 of 2		Job #:	
Company: SQ Environmental, LLC		Address: PO BOX 1991		City: Austin		State, Zip: TX, 78767	
Phone: 512-574-1199(Tel)		E-mail: s.enis@sqenv.com		Project Name: Harbor Island.		Site:	
Project #: 56007805		SOW#: 56007805		Due Date Requested:		TAT Requested (days):	
Purchase Order Requested		PO #:		WO #:		Matrix (W=water, S=solid, O=wasteoil, BT=tissue, A=air)	
Sample Identification		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)	
TT-1A-10 (8)		9/10/19		0900		G	
TT-1A-10 (10)				0915			
TT-1A-NE-7A (4)				1015			
SWW-2A (6)				1050			
SWW-1A (6)				1110			
SWW-1A (8)				1115			
TT-1B-16 (8)				1155			
TT-1B-16 (10)				1200			
Possible Hazard Identification		Poison B <input type="checkbox"/>		Unknown <input type="checkbox"/>		Radiological <input type="checkbox"/>	
Non-Hazard <input type="checkbox"/>		Flammable <input type="checkbox"/>		Skin Irritant <input type="checkbox"/>		Other (specify)	
Deliverable Requested: I, II, III, IV, Other (specify)		Empty Kit Relinquished by:		Date:		Time:	
Relinquished by: <i>Harsh Jhu</i>		Date/Time: 1415 @ 9/10/19		Company:		Received by:	
Relinquished by:		Date/Time:		Company:		Received by:	
Relinquished by:		Date/Time:		Company:		Received by:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		Special Instructions/Note:	

## Login Sample Receipt Checklist

Client: SQ Environmental, LLC

Job Number: 560-82178-1

**Login Number: 82178**

**List Number: 1**

**Creator: Olson, Troy**

**List Source: Eurofins TestAmerica, Corpus Christi**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	Refer to Job Narrative for details.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	Frozen on 9/10/19 @ 1515
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	Check done at department level as required.



## Environment Testing TestAmerica

### ANALYTICAL REPORT

Eurofins TestAmerica, Corpus Christi  
1733 N. Padre Island Drive  
Corpus Christi, TX 78408  
Tel: (361)289-2673

Laboratory Job ID: 560-82208-1  
Client Project/Site: Harbor Island

For:  
SQ Environmental, LLC  
PO BOX 1991  
Austin, Texas 78767

Attn: Sam Enis

Authorized for release by:  
9/12/2019 2:42:06 PM

Jodi Allen, Project Manager I  
(713)690-4444  
[jodi.allen@testamericainc.com](mailto:jodi.allen@testamericainc.com)



#### LINKS

Review your project  
results through  
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[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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## Definitions/Glossary

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82208-1

### Qualifiers

#### GC Semi VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

## Case Narrative

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82208-1

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**Job ID: 560-82208-1**

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**Laboratory: Eurofins TestAmerica, Corpus Christi**

### Narrative

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**Job Narrative  
560-82208-1**

### Comments

No additional comments.

### Receipt

The samples were received on 9/11/2019 2:55 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.9° C.

### Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): Trip Blank (560-82208-15). The container labels list SWW-1A-B2 (6) while the COC lists SWW-1A-B2 (8). The client was contacted, and the lab was instructed to use the container label identification..

One container for the following sample was received broken or leaking: SWW-1A-B1 (6) (560-82208-7). Sample 560-82208-G-7 received broken. (4oz soil jar) Client was notified on 09/11/19.

### GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

### Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.



### Detection Summary

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82208-1

Client Sample ID: TT-2B-4 (6)

Lab Sample ID: 560-82208-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Over C12-C28	13	J	47	9.4	mg/Kg	1		TX 1005	Total/NA
C6-C35	13	J	47	9.4	mg/Kg	1		TX 1005	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Corpus Christi



### Client Sample Results

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82208-1

Client Sample ID: TT-2B-4 (6)

Lab Sample ID: 560-82208-10

Date Collected: 09/10/19 15:35

Matrix: Solid

Date Received: 09/11/19 14:55

**Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Over C12-C28</b>	<b>13</b>	<b>J</b>	47	9.4	mg/Kg		09/11/19 15:30	09/11/19 16:37	1
Over C28-C35	ND		47	9.4	mg/Kg		09/11/19 15:30	09/11/19 16:37	1
C6-C12	ND		47	9.4	mg/Kg		09/11/19 15:30	09/11/19 16:37	1
<b>C6-C35</b>	<b>13</b>	<b>J</b>	47	9.4	mg/Kg		09/11/19 15:30	09/11/19 16:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	89		70 - 130				09/11/19 15:30	09/11/19 16:37	1
1-Chlorooctane (Surr)	88		70 - 130				09/11/19 15:30	09/11/19 16:37	1

QC Sample Results

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82208-1

Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Lab Sample ID: MB 560-166751/1-A  
Matrix: Solid  
Analysis Batch: 166757

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 166751

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Over C12-C28	ND		50	10	mg/Kg		09/11/19 14:08	09/11/19 16:10	1
Over C28-C35	ND		50	10	mg/Kg		09/11/19 14:08	09/11/19 16:10	1
C6-C12	ND		50	10	mg/Kg		09/11/19 14:08	09/11/19 16:10	1
C6-C35	ND		50	10	mg/Kg		09/11/19 14:08	09/11/19 16:10	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	105		70 - 130	09/11/19 14:08	09/11/19 16:10	1
1-Chlorooctane (Surr)	99		70 - 130	09/11/19 14:08	09/11/19 16:10	1

Lab Sample ID: LCS 560-166751/2-A  
Matrix: Solid  
Analysis Batch: 166757

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 166751

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
C6-C35	250	239		mg/Kg		96	75 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
<i>o</i> -Terphenyl	98		70 - 130
1-Chlorooctane (Surr)	101		70 - 130

Lab Sample ID: LCSD 560-166751/3-A  
Matrix: Solid  
Analysis Batch: 166757

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total/NA  
Prep Batch: 166751

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
C6-C35	250	232		mg/Kg		93	75 - 125	3	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
<i>o</i> -Terphenyl	101		70 - 130
1-Chlorooctane (Surr)	102		70 - 130

Lab Sample ID: 560-82194-B-4-C MS  
Matrix: Solid  
Analysis Batch: 166757

Client Sample ID: Matrix Spike  
Prep Type: Total/NA  
Prep Batch: 166751

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
C6-C35	3500		251	4840	4	mg/Kg		553	75 - 125

Surrogate	MS %Recovery	MS Qualifier	Limits
<i>o</i> -Terphenyl	94		70 - 130
1-Chlorooctane (Surr)	106		70 - 130

### QC Sample Results

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82208-1

**Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC) (Continued)**

Lab Sample ID: 560-82194-B-4-D MSD  
Matrix: Solid  
Analysis Batch: 166757

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Total/NA  
Prep Batch: 166751

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
C6-C35	3500		250	5580	4	mg/Kg		853	75 - 125	14	20
<b>Surrogate</b>	<b>%Recovery</b>	<b>MSD Qualifier</b>	<b>MSD Limits</b>								
<i>o</i> -Terphenyl	86		70 - 130								
1-Chlorooctane (Surr)	100		70 - 130								

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### Accreditation/Certification Summary

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82208-1

#### Laboratory: Eurofins TestAmerica, Corpus Christi

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704210-19-23	03-31-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
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## Method Summary

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82208-1

Method	Method Description	Protocol	Laboratory
TX 1005	Texas - Total Petroleum Hydrocarbon (GC)	TCEQ	TAL CC
5035A	Closed System Purge & Trap	SW846	TAL CC
TX_1005_S_Prep	Extraction - Texas Total petroleum Hyrdocarbons	TCEQ	TAL CC

**Protocol References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TCEQ = Texas Commission of Environmental Quality

**Laboratory References:**

TAL CC = Eurofins TestAmerica, Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673



### Sample Summary

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82208-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
560-82208-10	TT-2B-4 (6)	Solid	09/10/19 15:35	09/11/19 14:55	

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Loc: 560  
82208

Cincinnati, OH  
+1 513 733 5336  
Everett, WA  
+1 425 356 2600

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# Chain of Custody Form

Page 1 of 2

COC ID: 190844

Houston, TX  
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Salt Lake City, UT  
+1 801 266 7700

**SHORT  
HOLDING  
TIME**



Customer Information		Project Information		ALS Project Manager:		ALS Work Order #:											
Purchase Order	1089.006.001	Project Name	Harbor Island 1089.006.001	Parameter/Method Request for Analysis													
Work Order		Project Number	1089.006.001														
Company Name	SQ Environmental	Bill To Company	SQ Environmental														
Send Report To	Sara Enis	Invoice Attn	Accounts Payable														
Address	PO Box 1991	Address	PO Box 1991														
City/State/Zip	Austin, TX 78767	City/State/Zip	Austin TX 78767														
Phone	(281) 413-4266	Phone	(281) 413-4266														
Fax		Fax															
e-Mail Address	s.enis@squenv.com	e-Mail Address	accounting@squenv.com														
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Trip Blank			Water	1.8	2						X					
2	TT-2A-SLAB-CI (10)	9/11/19	0905	Soil	7.8,9	7	MA	X	2	2							X
3	TT-2A-B1 (8)	9/11/19	0735					X									X
4	TT-2A-19 (8)	9/11/19	0935					X									X
5	TT-1B-16-B2 (8)	9/11/19	1020					X									X
6	TT-2A-B4 (8)	9/11/19	0840					X									X
7	SWW-1A-B1 (6)	9/11/19	1155					X									X
8	TT-2A-B2 (8)	9/11/19	0750					X									X
9	TT-1B-16-B3 (8)	9/11/19	1116					X									X
10	TT-2B-4 (6)	9/10/19	1535					X									X

Barcode: 560-82208 Chain of Custody

Shipment Method:  STD 10 Wk Days  5 Wk Days  24-48hr  
 Required Turnaround Time: (Check Box)  Other \_\_\_\_\_ Results Due Date: \_\_\_\_\_

Notes: Harbor Island 1089 006 001

QC Package: (Check One Box Below)  
 Level II Std OC  RRP Checklist  
 Level III Std OC/Raw Data  RRP Level IV  
 Level IV SW/843/CLP  Other

Cooler ID: T110 Cooler Temp: 3.8/3.9

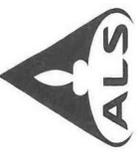
Received by: *[Signature]* Date: 9/11/19 Time: 1400  
 Received by (Laboratory): *[Signature]* Date: 9/11/19 Time: 1455  
 Checked by (Laboratory): *[Signature]* Date: \_\_\_\_\_ Time: \_\_\_\_\_

Preservative Key: 1-HCl 2-HNO<sub>3</sub> 3-H<sub>2</sub>SO<sub>4</sub> 4-NaOH 5-Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> 6-NaHSO<sub>4</sub> 7-Other 8-4°C 9-5035

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 2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.  
 3. The Chain of Custody is a legal document. All information must be completed accurately.





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# Chain of Custody Form

Page 2 of 2  
COC ID: 190845

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+1 610 948 5280  
Salt Lake City  
+1 801 266 5280

**SHORT HOLDING TIME**

Customer Information		Project Information		ALS Work Order #:																			
Purchase Order	1039.006.001	Project Name	Harbor Island 1089.006.001	Parameter/Method Request for Analysis																			
Work Order		Project Number	1039.006.001	A	8260_S (*5035* 8260 TCL 4.3 VOC )	B	TX1005_S_REV3 (*5035* TX1005 TPH)	C	8270_LOW_S (8270 SVOC TCL 4.3)	D	RCRA 8 Soil (SW6020/7471 RCRA 8 Metals)	E	MOIST_SW3550 (Moist%)	F	8260_LL_W (SW8260 VOC TCL 4.3)	G		H		I		J	
Company Name	SQ Environmental	Bill To Company	SQ Environmental																				
Send Report To	Sam Enis	Invoice Attn	Accounts Payable																				
Address	PO Box 1991	Address	PO Box 1991																				
City/State/Zip	Austin, TX 78767	City/State/Zip	Austin TX 78767																				
Phone	(281) 413-4266	Phone	(281) 413-4266																				
Fax		Fax																					
e-Mail Address	s.enis@squenv.com	e-Mail Address	accounting@squenv.com																				
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold						
1	Trip Blank			Water	1.8	2						X											
2	TT-1B-16-B1 (8)	9/11/19	1100	Soil	7.8,9	7	X	X	X	X	X											X	
3	SWW-1A-B7 (8)	9/11/19	1210				X	X	X	X	X											X	
4	SWW-1A-B3 (6)	9/11/19	1230				X	X	X	X	X											X	
5																							
6																							
7																							
8																							
9																							
10																							

Required Turnaround Time: (Check Box)  
 STD 10 Wk Days  
 5 Wk Days  
 24-hour  
 Other

Results Due Date:

Notes: Harbor Island 1089 006 001

QC Package: (Check One Box Below)  
 Level II Std QC  
 Level III Std QC/Raw Date  
 Level IV SW846/ICLP  
 Other

Received by: [Signature]  
 Received by (Laboratory): [Signature]  
 Checked by (Laboratory): [Signature]

Time: 1400  
 Date: 9/11/19  
 Time: 14:55  
 Date: 9/11/19  
 Time:  
 Date:

Shipment Method  
 Received by:  
 Received by (Laboratory):  
 Checked by (Laboratory):

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4°C 9-5035

Relinquished by: [Signature]  
 Relinquished by: [Signature]  
 Logged by (Laboratory): [Signature]

Relinquished by: [Signature]  
 Relinquished by: [Signature]  
 Logged by (Laboratory): [Signature]

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**SHORT HOLDING TIME**

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**Chain of Custody Form**

Page      of     

COC ID: 190851

Customer Information				Project Information				ALS Work Order #:											
Purchase Order	1089.006.001	Project Name	Harbor Island 1089.006.001	Parameter/Method Request for Analysis															
Work Order		Project Number	1089.006.001	A	B	C	D	E	F	G	H	I	J	Hold					
Company Name	SQ Environmental	Bill To Company	SQ Environmental	B															
Send Report To	Sam Enis	Invoice Attn	Accounts Payable	C															
Address	PO Box 1991	Address	PO Box 1991	D															
City/State/Zip	Austin, TX 78767	City/State/Zip	Austin TX 78767	E															
Phone	(281) 413-4266	Phone	(281) 413-4266	F															
Fax		Fax		G															
e-Mail Address	s.enis@squenv.com	e-Mail Address	accounting@squenv.com	H															
				I															
				J															
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold		
1	Trip Blank			Water	1,8	2						X							
2				Soil	7,8,9	7	X	X	X	X	X								
3	#1-2(5)	9/11/19	1300				X										X		
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Shipper's Please Print & Sign

Relinquished by: *[Signature]* Date: 9/11/19 Time: 14:00

Relinquished by: *[Signature]* Date: 9/11/19 Time: 14:55

Logged by (Laboratory): *[Signature]* Date: 9/12/2019

Reservative Key: 1-HCl 2-HNO<sub>3</sub> 3-H<sub>2</sub>SO<sub>4</sub> 4-NaOH 5-Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> 6-NaHSO<sub>4</sub> 7-Other 8-4°C 9-5035

QC Package: (Check One Box Below)

Level II Str QC  Level III Str QC  Level IV SW/843/CLP

Notes: Harbor Island 1089 006 001

Required Turnaround Time: (Check Box)  STD 10 Wk Days  5 Wk Days  2 Wk Days  24 Hour

Results Due Date:

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### Login Sample Receipt Checklist

Client: SQ Environmental, LLC

Job Number: 560-82208-1

**Login Number: 82208**

**List Source: Eurofins TestAmerica, Corpus Christi**

**List Number: 1**

**Creator: Medellin, Alyssa L**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	3 Trip Blank samples on COC only received 2.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	False	Sample 560-82208-G-7 received broken ( 4oz soil jar)
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	Check done at department level as required.



# Environment Testing TestAmerica

## ANALYTICAL REPORT

Eurofins TestAmerica, Corpus Christi  
1733 N. Padre Island Drive  
Corpus Christi, TX 78408  
Tel: (361)289-2673

Laboratory Job ID: 560-82208-2  
Client Project/Site: Harbor Island

For:  
SQ Environmental, LLC  
PO BOX 1991  
Austin, Texas 78767

Attn: Sam Enis

Authorized for release by:  
9/16/2019 9:57:02 AM

Jodi Allen, Project Manager I  
(713)690-4444  
[jodi.allen@testamericainc.com](mailto:jodi.allen@testamericainc.com)



### LINKS

Review your project  
results through  
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*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

## Definitions/Glossary

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82208-2

### Qualifiers

#### GC Semi VOA

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

## Case Narrative

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82208-2

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**Job ID: 560-82208-2**

---

**Laboratory: Eurofins TestAmerica, Corpus Christi**

### Narrative

---

**Job Narrative**  
**560-82208-2**

### Comments

No additional comments.

### Receipt

The samples were received on 9/11/2019 2:55 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.9° C.

### Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): Trip Blank (560-82208-15). The container labels list SWW-1A-B2 (6) while the COC lists SWW-1A-B2 (8). The client was contacted, and the lab was instructed to use the container label identification..

One container for the following sample was received broken or leaking: SWW-1A-B1 (6) (560-82208-7). Sample 560-82208-G-7 received broken. (4oz soil jar) Client was notified on 09/11/19.

### GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

### Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

### Lab Admin

Client requesting to analyze the samples on a 2 day TAT.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



## Detection Summary

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82208-2

### Client Sample ID: TT-1B-16-B2 (8)

Lab Sample ID: 560-82208-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Over C12-C28	370		88	18	mg/Kg	2		TX 1005	Total/NA
Over C28-C35	340		88	18	mg/Kg	2		TX 1005	Total/NA
C6-C35	710		88	18	mg/Kg	2		TX 1005	Total/NA

### Client Sample ID: TT-2A-B4 (8)

Lab Sample ID: 560-82208-6

No Detections.

### Client Sample ID: SWW-1A-B1 (6)

Lab Sample ID: 560-82208-7

No Detections.

### Client Sample ID: TT-2A-B2 (8)

Lab Sample ID: 560-82208-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Over C12-C28	46		42	8.4	mg/Kg	1		TX 1005	Total/NA
Over C28-C35	23	J	42	8.4	mg/Kg	1		TX 1005	Total/NA
C6-C35	69		42	8.4	mg/Kg	1		TX 1005	Total/NA

### Client Sample ID: TT-1B-16-B3 (8)

Lab Sample ID: 560-82208-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Over C12-C28	920		94	19	mg/Kg	2		TX 1005	Total/NA
Over C28-C35	660		94	19	mg/Kg	2		TX 1005	Total/NA
C6-C35	1600		94	19	mg/Kg	2		TX 1005	Total/NA

### Client Sample ID: TT-1B-16-B1 (8)

Lab Sample ID: 560-82208-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Over C12-C28	1200		170	35	mg/Kg	4		TX 1005	Total/NA
Over C28-C35	220		170	35	mg/Kg	4		TX 1005	Total/NA
C6-C35	1400		170	35	mg/Kg	4		TX 1005	Total/NA

### Client Sample ID: SWW-1A-B2 (6)

Lab Sample ID: 560-82208-13

No Detections.

### Client Sample ID: SWW-1A-B3 (6)

Lab Sample ID: 560-82208-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Over C12-C28	150		44	8.8	mg/Kg	1		TX 1005	Total/NA
Over C28-C35	26	J	44	8.8	mg/Kg	1		TX 1005	Total/NA
C6-C35	180		44	8.8	mg/Kg	1		TX 1005	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Corpus Christi

### Client Sample Results

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82208-2

Client Sample ID: TT-1B-16-B2 (8)

Lab Sample ID: 560-82208-5

Date Collected: 09/11/19 10:20

Matrix: Solid

Date Received: 09/11/19 14:55

**Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Over C12-C28	370		88	18	mg/Kg		09/11/19 15:00	09/13/19 17:50	2
Over C28-C35	340		88	18	mg/Kg		09/11/19 15:00	09/13/19 17:50	2
C6-C12	ND		88	18	mg/Kg		09/11/19 15:00	09/13/19 17:50	2
C6-C35	710		88	18	mg/Kg		09/11/19 15:00	09/13/19 17:50	2
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	77		70 - 130				09/11/19 15:00	09/13/19 17:50	2
1-Chlorooctane (Surr)	85		70 - 130				09/11/19 15:00	09/13/19 17:50	2

Client Sample ID: TT-2A-B4 (8)

Lab Sample ID: 560-82208-6

Date Collected: 09/11/19 08:40

Matrix: Solid

Date Received: 09/11/19 14:55

**Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Over C12-C28	ND		40	8.0	mg/Kg		09/11/19 15:00	09/13/19 17:04	1
Over C28-C35	ND		40	8.0	mg/Kg		09/11/19 15:00	09/13/19 17:04	1
C6-C12	ND		40	8.0	mg/Kg		09/11/19 15:00	09/13/19 17:04	1
C6-C35	ND		40	8.0	mg/Kg		09/11/19 15:00	09/13/19 17:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	90		70 - 130				09/11/19 15:00	09/13/19 17:04	1
1-Chlorooctane (Surr)	80		70 - 130				09/11/19 15:00	09/13/19 17:04	1

Client Sample ID: SWW-1A-B1 (6)

Lab Sample ID: 560-82208-7

Date Collected: 09/11/19 11:55

Matrix: Solid

Date Received: 09/11/19 14:55

**Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Over C12-C28	ND		36	7.2	mg/Kg		09/11/19 15:00	09/13/19 17:13	1
Over C28-C35	ND		36	7.2	mg/Kg		09/11/19 15:00	09/13/19 17:13	1
C6-C12	ND		36	7.2	mg/Kg		09/11/19 15:00	09/13/19 17:13	1
C6-C35	ND		36	7.2	mg/Kg		09/11/19 15:00	09/13/19 17:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	90		70 - 130				09/11/19 15:00	09/13/19 17:13	1
1-Chlorooctane (Surr)	90		70 - 130				09/11/19 15:00	09/13/19 17:13	1

Client Sample ID: TT-2A-B2 (8)

Lab Sample ID: 560-82208-8

Date Collected: 09/11/19 07:50

Matrix: Solid

Date Received: 09/11/19 14:55

**Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Over C12-C28	46		42	8.4	mg/Kg		09/11/19 15:00	09/13/19 17:31	1
Over C28-C35	23	J	42	8.4	mg/Kg		09/11/19 15:00	09/13/19 17:31	1
C6-C12	ND		42	8.4	mg/Kg		09/11/19 15:00	09/13/19 17:31	1
C6-C35	69		42	8.4	mg/Kg		09/11/19 15:00	09/13/19 17:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	85		70 - 130				09/11/19 15:00	09/13/19 17:31	1

Eurofins TestAmerica, Corpus Christi

### Client Sample Results

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82208-2

**Client Sample ID: TT-2A-B2 (8)**

**Lab Sample ID: 560-82208-8**

Date Collected: 09/11/19 07:50

Matrix: Solid

Date Received: 09/11/19 14:55

**Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC) (Continued)**

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane (Surr)	87		70 - 130	09/11/19 15:00	09/13/19 17:31	1

**Client Sample ID: TT-1B-16-B3 (8)**

**Lab Sample ID: 560-82208-9**

Date Collected: 09/11/19 11:10

Matrix: Solid

Date Received: 09/11/19 14:55

**Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Over C12-C28	920		94	19	mg/Kg		09/11/19 15:00	09/13/19 17:59	2
Over C28-C35	660		94	19	mg/Kg		09/11/19 15:00	09/13/19 17:59	2
C6-C12	ND		94	19	mg/Kg		09/11/19 15:00	09/13/19 17:59	2
C6-C35	1600		94	19	mg/Kg		09/11/19 15:00	09/13/19 17:59	2
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
o-Terphenyl	82		70 - 130	09/11/19 15:00	09/13/19 17:59	2			
1-Chlorooctane (Surr)	89		70 - 130	09/11/19 15:00	09/13/19 17:59	2			

**Client Sample ID: TT-1B-16-B1 (8)**

**Lab Sample ID: 560-82208-12**

Date Collected: 09/11/19 11:00

Matrix: Solid

Date Received: 09/11/19 14:55

**Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Over C12-C28	1200		170	35	mg/Kg		09/11/19 15:00	09/16/19 08:27	4
Over C28-C35	220		170	35	mg/Kg		09/11/19 15:00	09/16/19 08:27	4
C6-C12	ND		170	35	mg/Kg		09/11/19 15:00	09/16/19 08:27	4
C6-C35	1400		170	35	mg/Kg		09/11/19 15:00	09/16/19 08:27	4
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
o-Terphenyl	83		70 - 130	09/11/19 15:00	09/16/19 08:27	4			
1-Chlorooctane (Surr)	89		70 - 130	09/11/19 15:00	09/16/19 08:27	4			

**Client Sample ID: SWW-1A-B2 (6)**

**Lab Sample ID: 560-82208-13**

Date Collected: 09/11/19 12:10

Matrix: Solid

Date Received: 09/11/19 14:55

**Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Over C12-C28	ND		45	9.0	mg/Kg		09/11/19 15:00	09/13/19 17:22	1
Over C28-C35	ND		45	9.0	mg/Kg		09/11/19 15:00	09/13/19 17:22	1
C6-C12	ND		45	9.0	mg/Kg		09/11/19 15:00	09/13/19 17:22	1
C6-C35	ND		45	9.0	mg/Kg		09/11/19 15:00	09/13/19 17:22	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
o-Terphenyl	87		70 - 130	09/11/19 15:00	09/13/19 17:22	1			
1-Chlorooctane (Surr)	89		70 - 130	09/11/19 15:00	09/13/19 17:22	1			

### Client Sample Results

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82208-2

Client Sample ID: SWW-1A-B3 (6)

Lab Sample ID: 560-82208-14

Date Collected: 09/11/19 12:30

Matrix: Solid

Date Received: 09/11/19 14:55

**Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Over C12-C28	150		44	8.8	mg/Kg		09/11/19 15:00	09/13/19 17:41	1
Over C28-C35	26	J	44	8.8	mg/Kg		09/11/19 15:00	09/13/19 17:41	1
C6-C12	ND		44	8.8	mg/Kg		09/11/19 15:00	09/13/19 17:41	1
C6-C35	180		44	8.8	mg/Kg		09/11/19 15:00	09/13/19 17:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	91		70 - 130				09/11/19 15:00	09/13/19 17:41	1
1-Chlorooctane (Surr)	93		70 - 130				09/11/19 15:00	09/13/19 17:41	1

QC Sample Results

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82208-2

Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC)

Lab Sample ID: MB 560-166833/1-A  
Matrix: Solid  
Analysis Batch: 166814

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 166833

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Over C12-C28	ND		50	10	mg/Kg		09/13/19 12:38	09/13/19 16:37	1
Over C28-C35	ND		50	10	mg/Kg		09/13/19 12:38	09/13/19 16:37	1
C6-C12	ND		50	10	mg/Kg		09/13/19 12:38	09/13/19 16:37	1
C6-C35	ND		50	10	mg/Kg		09/13/19 12:38	09/13/19 16:37	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
o-Terphenyl	80		70 - 130	09/13/19 12:38	09/13/19 16:37	1
1-Chlorooctane (Surr)	92		70 - 130	09/13/19 12:38	09/13/19 16:37	1

Lab Sample ID: LCS 560-166833/2-A  
Matrix: Solid  
Analysis Batch: 166814

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 166833

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
C6-C35	250	216		mg/Kg		86	75 - 125

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
o-Terphenyl	84		70 - 130
1-Chlorooctane (Surr)	91		70 - 130

Lab Sample ID: LCSD 560-166833/3-A  
Matrix: Solid  
Analysis Batch: 166814

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total/NA  
Prep Batch: 166833

Analyte	Spike Added	LCSD	LCSD	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
		Result	Qualifier						
C6-C35	250	218		mg/Kg		87	75 - 125	1	20

Surrogate	LCSD	LCSD	Limits
	%Recovery	Qualifier	
o-Terphenyl	83		70 - 130
1-Chlorooctane (Surr)	89		70 - 130

Lab Sample ID: 560-82250-B-1-C MS  
Matrix: Solid  
Analysis Batch: 166850

Client Sample ID: Matrix Spike  
Prep Type: Total/NA  
Prep Batch: 166833

Analyte	Sample	Sample	Spike Added	MS	MS	Unit	D	%Rec	%Rec. Limits
	Result	Qualifier		Result	Qualifier				
C6-C35	1200	F1	943	1930	F1	mg/Kg		72	75 - 125

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
o-Terphenyl	77		70 - 130
1-Chlorooctane (Surr)	97		70 - 130

QC Sample Results

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82208-2

Method: TX 1005 - Texas - Total Petroleum Hydrocarbon (GC) (Continued)

Lab Sample ID: 560-82250-B-1-D MSD  
Matrix: Solid  
Analysis Batch: 166850

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Total/NA  
Prep Batch: 166833

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
C6-C35	1200	F1	962	1950	F1	mg/Kg		73	75 - 125	1	20
<b>Surrogate</b>	<b>%Recovery</b>	<b>MSD Qualifier</b>	<b>MSD Limits</b>								
<i>o</i> -Terphenyl	78		70 - 130								
1-Chlorooctane (Surr)	94		70 - 130								



### Accreditation/Certification Summary

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82208-2

#### Laboratory: Eurofins TestAmerica, Corpus Christi

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704210-19-23	03-31-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
-----------------	-------------	--------	---------



## Method Summary

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82208-2

Method	Method Description	Protocol	Laboratory
TX 1005	Texas - Total Petroleum Hydrocarbon (GC)	TCEQ	TAL CC
5035A	Closed System Purge & Trap	SW846	TAL CC
TX_1005_S_Prep	Extraction - Texas Total petroleum Hyrdocarbons	TCEQ	TAL CC

**Protocol References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TCEQ = Texas Commission of Environmental Quality

**Laboratory References:**

TAL CC = Eurofins TestAmerica, Corpus Christi, 1733 N. Padre Island Drive, Corpus Christi, TX 78408, TEL (361)289-2673



## Sample Summary

Client: SQ Environmental, LLC  
Project/Site: Harbor Island

Job ID: 560-82208-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
560-82208-5	TT-1B-16-B2 (8)	Solid	09/11/19 10:20	09/11/19 14:55	
560-82208-6	TT-2A-B4 (8)	Solid	09/11/19 08:40	09/11/19 14:55	
560-82208-7	SWW-1A-B1 (6)	Solid	09/11/19 11:55	09/11/19 14:55	
560-82208-8	TT-2A-B2 (8)	Solid	09/11/19 07:50	09/11/19 14:55	
560-82208-9	TT-1B-16-B3 (8)	Solid	09/11/19 11:10	09/11/19 14:55	
560-82208-12	TT-1B-16-B1 (8)	Solid	09/11/19 11:00	09/11/19 14:55	
560-82208-13	SWW-1A-B2 (6)	Solid	09/11/19 12:10	09/11/19 14:55	
560-82208-14	SWW-1A-B3 (6)	Solid	09/11/19 12:30	09/11/19 14:55	



**Allen, Jodi**

---

**From:** Sam Enis <s.enis@sqenv.com>  
**Sent:** Friday, September 13, 2019 8:26 AM  
**To:** Allen, Jodi  
**Cc:** Kaitlin Johnson; Castulo Morales  
**Subject:** Harbor Island

**-External Email-**

---

Jodi,

Please analyze the following Harbor Island samples currently on hold for TPH 1005 on a rush 48-hour TAT:

- TT-2A-B4 (8)
- TT-2A-B2 (8)
  
- TT-1B-16-B3 (8)
- TT-1B-16-B2 (8)
- TT-1B-16-B1 (8)
  
- SWW-1A-B3 (8)
- SWW-1A-B1 (8)
- SWW-1A-B2 (8)



**Sam Enis, P.G.**  
SQ Environmental, LLC  
[S.Enis@SQEnv.com](mailto:S.Enis@SQEnv.com)  
[www.SQEnv.com](http://www.SQEnv.com)  
512-574-1199

Loc: 560  
82208

Cincinnati, OH  
+1 513 733 5336  
Everett, WA  
+1 425 356 2600

Fort Collins, CO  
+1 970 490 1511  
Holland, MI  
+1 616 399 6070

# Chain of Custody Form

Page 1 of 2

COC ID: 190844

Houston, TX  
+1 281 530 5656  
Middletown, PA  
+1 717 944 5541

Spring City, PA  
+1 610 948 4903  
Salt Lake City, UT  
+1 801 266 7700

**SHORT  
HOLDING  
TIME**



Customer Information		Project Information		ALS Project Manager:		ALS Work Order #:											
Purchase Order	1089.006.001	Project Name	Harbor Island 1089.006.001	Parameter/Method Request for Analysis		A 8260_S (*5035* 8260 TCL 4.3 VOC )											
Work Order		Project Number	1089.006.001			B TX1005_S_REV3 (*5035* TX1005 TPH)											
Company Name	SQ Environmental	Bill To Company	SQ Environmental			C 8270_LOW_S (8270 SVOC TCL 4.3)											
Send Report To	Sara Enis	Invoice Attn	Accounts Payable			D RCRA 8 Soil (SW6020/7471 RCRA 8 Metals)											
Address	PO Box 1991	Address	PO Box 1991			E MOIST_SW35:50 (Moist%)											
City/State/Zip	Austin, TX 78767	City/State/Zip	Austin TX 78767			F 8260_LL_W (SW8260 VOC TCL 4.3)											
Phone	(281) 413-4266	Phone	(281) 413-4266			Barcode: 560-82208 Chain of Custody											
Fax		Fax															
e-Mail Address	s.enis@squenv.com	e-Mail Address	accounting@squenv.com														
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Trip Blank			Water	1.8	2						X					
2	TT-2A-SLAB-CI (10)	9/11/19	0905	Soil	7.8,9	7	MP	X	2	2							X
3	TT-2A-B1 (8)	9/11/19	0735					X									X
4	TT-2A-19 (8)	9/11/19	0935					X									X
5	TT-1B-16-B2 (8)	9/11/19	1020					X									X
6	TT-2A-B4 (8)	9/11/19	0840					X									X
7	SWW-1A-B1 (6)	9/11/19	1155					X									X
8	TT-2A-B2 (8)	9/11/19	0750					X									X
9	TT-1B-16-B3 (8)	9/11/19	1116					X									X
10	TT-2B-4 (6)	9/10/19	1535					X									X

Shipment Method: Harbor Island 1089 006 001

Required Turnaround Time: (Check Box)  STD 10 Wk Days  5 Wk Days  24-48 Hr

QC Package: (Check One Box Below)  Level II Std OC  RRP Checklist  RRP Level IV

Level III Std OC/Raw Date:  Level IV SW/843/CLP  Other

Notes: Harbor Island 1089 006 001

Received by: *[Signature]* Date: 9/11/19 Time: 1400

Received by (Laboratory): *[Signature]* Date: 9/11/19 Time: 1455

Checked by (Laboratory): *[Signature]* Date: Time:

Preservative Key: 1-HCl 2-HNO<sub>3</sub> 3-H<sub>2</sub>SO<sub>4</sub> 4-NaOH 5-Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> 6-NaHSO<sub>4</sub> 7-Other 8-4°C 9-5035

Page 14 of 17

9/16/2019

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Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.  
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# Chain of Custody Form

Page 2 of 2

COC ID: 190845

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Middletown, PA  
+1 717 944 5541

Spring City, PA  
+1 610 948 5280  
Salt Lake City  
+1 801 266 5280

**SHORT HOLDING TIME**

Customer Information		Project Information		ALS Work Order #:																			
Purchase Order	1039.006.001	Project Name	Harbor Island 1089.006.001	Parameter/Method Request for Analysis																			
Work Order		Project Number	1039.006.001	A	8260_S (*5035* 8260 TCL 4.3 VOC )	B	TX1005_S_REV3 (*5035* TX1005 TPH)	C	8270_LOW_S (8270 SVOC TCL 4.3)	D	RCRA 8 Soil (SW6020/7471 RCRA 8 Metals)	E	MOIST_SW3550 (Moist%)	F	8260_LL_W (SW8260 VOC TCL 4.3)	G		H		I		J	
Company Name	SQ Environmental	Bill To Company	SQ Environmental																				
Send Report To	Sam Enis	Invoice Attn	Accounts Payable																				
Address	PO Box 1991	Address	PO Box 1991																				
City/State/Zip	Austin, TX 78767	City/State/Zip	Austin TX 78767																				
Phone	(281) 413-4266	Phone	(281) 413-4266																				
Fax		Fax																					
e-Mail Address	s.enis@squenv.com	e-Mail Address	accounting@squenv.com																				
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold						
1	Trip Blank			Water	1.8	2						X					X						
2	TT-1B-16-B1(8)	9/11/19	1100	Soil	7.8,9	7	X	X	X	X	X						X						
3	SWW-1A-B7(8)	9/11/19	1210					X	X	X							X						
4	SWW-1A-B3(6)	9/11/19	1230					X									X						
5																							
6																							
7																							
8																							
9																							
10																							

Attachment A  
Page 164 of 166

Required Turnaround Time: (Check Box)  
 STD 10 Wk Days  
 5 Wk Days  
 2 Wk Days  
 24-hour  
 Other \_\_\_\_\_

Results Due Date: \_\_\_\_\_

Notes: Harbor Island 1089.006.001

QC Package: (Check One Box Below)  
 Level II Std QC  
 Level III Std QC/Raw Date  
 Level IV SW846/ICLP  
 Other

Relinquished by: *Sam Enis* Date: 9/11/19 Time: 1400  
 Relinquished by: *Sam Enis* Date: 9/11/19 Time: 14:55  
 Logged by (Laboratory): *Sam Enis* Date: \_\_\_\_\_ Time: \_\_\_\_\_

Preservative Key: 1-HCl 2-HNO<sub>3</sub> 3-H<sub>2</sub>O<sub>2</sub> 4-NaOH 5-Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> 6-NaHSO<sub>4</sub> 7-Other 8-4°C 9-5035

Sampler(s) Please Print & Sign

Shipment Method

Received by (Laboratory): \_\_\_\_\_  
 Received by (Laboratory): \_\_\_\_\_  
 Checked by (Laboratory): \_\_\_\_\_

Cooler ID: DRP Cooler Temp: 3.8/3.9  
 Cooler ID: \_\_\_\_\_ Cooler Temp: \_\_\_\_\_

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Everett, WA  
+1 425 356 2600



**Chain of Custody Form**

Page      of     

**COC ID: 190851**

Customer Information				Project Information				ALS Work Order #:											
Purchase Order	1089.006:001	Project Name	Harbor Island 1089.006.001	Parameter/Method Request for Analysis															
Work Order		Project Number	1089.006.001																
Company Name	SQ Environmental	Bill To Company	SQ Environmental																
Send Report To	Sam Enis	Invoice Attn	Accounts Payable																
Address	PO Box 1991	Address	PO Box 1991																
City/State/Zip	Austin, TX 78767	City/State/Zip	Austin TX 78767																
Phone	(281) 413-4266	Phone	(281) 413-4266																
Fax		Fax																	
e-Mail Address	s.enis@squenv.com	e-Mail Address	accounting@squenv.com																
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold		
1	Trip Blank			Water	1,8	2						X							
2				Soil	7,8,9	7	X	X	X	X	X								
3	#1-2 (5)	9/11/19	1300				X										X		
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Shipper's Mark: \_\_\_\_\_

Shipment Method: \_\_\_\_\_

Received by: \_\_\_\_\_

Received by (Laboratory): \_\_\_\_\_

Checked by (Laboratory): \_\_\_\_\_

Time: 14:00

Time: 14:55

Time: \_\_\_\_\_

Reservative Key: 1-HCl 2-HNO<sub>3</sub> 3-H<sub>2</sub>SO<sub>4</sub> 4-NaOH 5-Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> 6-NaHSO<sub>4</sub> 7-Other 8-4°C 9-5035

QC Package: (Check One Box Below)

Level II Str QC  Level III Str QC  Level IV SW/843/CLP

RRP Checklist  RRP Level IV

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### Login Sample Receipt Checklist

Client: SQ Environmental, LLC

Job Number: 560-82208-2

Login Number: 82208

List Source: Eurofins TestAmerica, Corpus Christi

List Number: 1

Creator: Medellin, Alyssa L

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	3 Trip Blank samples on COC only received 2.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	False	Sample 560-82208-G-7 received broken ( 4oz soil jar)
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	Check done at department level as required.

# **Attachment B**

**PRELIMINARY DRAFT****1.0 INTRODUCTION AND SITE BACKGROUND**

The Port of Corpus Christi (the Port) has tasked ICF Kaiser Engineers, Inc. (ICF Kaiser) to conduct Phase I of the site investigation of the Fina Harbor Island Terminal property (the Site). The Port is currently considering purchase of the property from Fina Oil and Chemical Company (Fina). The objective of Phase I work is to identify potential environmental issues at the Site that may influence the Port's desire to proceed with the property transaction.

Phase I consisted of a soil investigation and a ground penetration radar (GPR) survey. ICF Kaiser performed field activities January 9 through January 16, 1995. This report represents completion of Phase I of the site investigation.

**1.1 SITE LOCATION AND DESCRIPTION**

The Fina Harbor Island Tank Terminal property is located on Harbor Island in Aransas Pass, Nueces County, Texas. The location of the Site is shown on Port Aransas 7.5 minute quadrangle topographic map (Figure 1). The Site consists of the Fina Tank Terminal and three tracts of vacant land.

The Fina Tank Terminal is a 77.83-acre property with 14 aboveground storage tanks (ASTs), two offices, a bunkhouse, and several miscellaneous storage sheds and areas. Two lift stations are also located on-site. Lift Station A is located on the northern-central portion of the terminal, across from the main office, and Lift Station B is located on the northeast corner of terminal, next to the loading docks. Approximately 2-acres in the northwest corner of the terminal is currently devoted to landfarm activities. A small wooden storage platform and a storage shed are located near the center of the tank terminal. The tank terminal is surrounded by a chain link fence.

Property Tract 1 is a 177.89-acre island located north of the Aransas Channel. The eastern portion of Tract 1 is an area of vegetated sand dunes. Evidence of dredging activities are apparent at the center of Tract 1. This area is devoid of vegetation. A north/south oriented powerline bisects the center of Tract 1. The western portion of Tract 1 is a series of small flat low lying islands.

Property Tract 2 and Property Tract 3 consist of 39.56-acres located between the terminal access road and the Aransas Channel, north of the tank terminal. Property Tract 3 is a 13.28-acre tract of land that begins parallel to the western boundary of the tank terminal and extends in a northwesterly direction to Property Tract 2. Property Tract 2 is a 26.28-acre tract of land that borders the western portion of Property Tract 3 and extends northwest to the Aransas Channel.

Property Tract 1 is bounded the Lydia Ann Channel to the east, the Aransas Channel to the south and west, and sand dunes and estuarian marsh to the north. Property Tracts 2 and 3 are long narrow properties bounded by the Aransas Channel to the north and west, the terminal access road to the south, and a narrow, undeveloped, piece of Harbor Island to the east. The

TPH IOM  
Page 4Industrial/Commercial Baseline TPH Cleanup Levels

An industrial baseline TPH level can be developed similarly as follows:

$$MSC_{ind} = \frac{1}{\frac{1}{MSC_{ingestion-ind}} + \frac{1}{MSC_{dermal-ind}}}$$

$$MSC_{ingestion-ind} = \frac{HQ \times BW \times RfDo \times AT \times 365 \text{ days/yr}}{10^{-6} \times ED \times EF \times IR}$$

$$MSC_{ingestion-ind} = \frac{1 \times 70 \times 0.03 \times 25 \times 365}{10^{-6} \times 25 \times 250 \times 50} = 61,224 \text{ mg/kg}$$

$$MSC_{dermal-ind} = \frac{HQ \times RfD.d \times BW \times AT \times 365 \text{ days/yr}}{10^{-6} \times ED \times EF \times SA \times AF \times ABS.d}$$

$$MSC_{dermal-ind} = \frac{1 \times 0.027 \times 70 \times 25 \times 365}{10^{-6} \times 25 \times 250 \times 2500 \times 0.2 \times 0.13} = 42,478 \text{ mg/kg}$$

$$MSC_{ind} = \frac{1}{1/61,224 + 1/42,478} = 25,075 \text{ mg/kg}$$

The above calculations indicate that an acceptable baseline industrial TPH health-based cleanup level is **25,000 mg/kg**. This concentration is the industrial RRS 2 - SAI for TPH.

Remember 4,100 mg/kg and 25,000 mg/kg are bottom line numbers only. This assumes a conservative scenario in which all the TPH is composed of C9 through C32 alkenes/aromatics. A higher cleanup level may be derived if the party partitions the TPH out into its actual composition and performs the appropriate surrogate approach calculations which demonstrate that the Hazard Index is less than one for the site specific TPH.

Now that we have bottom line soil numbers for TPH, we can use them in conjunction with the already derived RRS No. 2 numbers which have been derived for the reference dose 0.03 mg/kg day non-carcinogenic PAHs (pyrene). This gives us the following RRS No. 2 cleanup numbers:

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Railroad Commission of Texas  
November 16, 1999  
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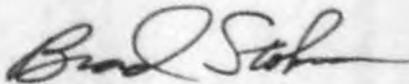
Issue: In the fourth paragraph of POCCA's letter, they contend that EPA Method 418.1 can "miss some of the heavier hydrocarbons", and that the TNRCC method 1005 provides data that is comparable to and correlates well to method 418.1. They state that method 1005 is now recommended by TNRCC for TPH analyses. POCCA also mentions TNRCC method 1006 and states that, "...the sum of the factions have good correlation with the total TPH with some slight overlap."

Fina's Response: The attached graph shows that 418.1 has a wider range of detection than any of the GC methods and its range includes the heavier hydrocarbons. Method 418.1 detects the range of hydrocarbons from C10 to C45. POCCA recommended TNRCC Method 1005, which can detect from C6 to C28. The Port claims that this method correlates well with the 418.1 analysis. However, the range of detected hydrocarbons for Method 1005 is less than the range detected by the Massachusetts method which is C5 to C36. Fina contends that the Massachusetts method includes the heavier compounds that Method 1005 omits and consequently would have a much better match between total TPH and the carbon range sum. TNRCC has required use of Method 1005 for the Petroleum Storage Tank program only. As pointed out in the Port's letter, Method 1006 is in draft form and was not in use at the time of this assessment.

If you have questions or need additional information, please do not hesitate to call me at 361-882-3839.

Sincerely,

RMT, Inc.



Brad Stokes  
Branch Manager

Attachments: Table  
Graph  
TPH and Carbon Range Analytical Data  
TPH and Leachate Analytical Data  
TNRCC Memorandum  
MADEP VPH/EPH Method Summaries

xc: Ms. Diane Combs, Fina Oil & Chemical Company  
Mr. Dipak Desai, Port of Corpus Christi Authority  
Central Files (2)

Ms. Leslie Savage  
 Railroad Commission of Texas  
 November 16, 1999  
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While there are more samples from the 4 foot interval, samples from this depth are less likely to have weathered as much as near-surface samples. This is a conservative bias that favors a more stringent cleanup level.

POCCA's assertion that the number of samples may be insufficient has no statistical basis in fact. A total of 27 samples were collected and analyzed for TPH and the carbon range breakdown. The following table presents significant values of  $r$ . The correlation coefficients from the linear regressions range from 0.693 to 0.947. From this table we can see that with 27 samples, a correlation coefficient of about 0.38 is statistically significant.

Number	Significant Values of $r$
5	0.875
10	0.632
15	0.514
20	0.444
22	0.423
24	0.404
26	0.388
28	0.374
30	0.361

If our correlation coefficient is less than the significant value of  $r$  for the sample size, we can conclude that there is no linear relationship. However, the correlation coefficients are far above the significant value of  $r$  for the sample size and we can conclude that a significant linear relationship exists. As with any statistical measure, there is a degree of uncertainty. This table was constructed with a 95% confidence level.

0 0 0 0 2 0 3 2 5 9

Ms. Leslie Savage  
Railroad Commission of Texas  
November 16, 1999  
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extreme difficulty of achieving perfect homogenation of a soil sample. Therefore, given a 50-50 chance of one aliquot having a higher concentration and one aliquot having a lower concentration, it is expected that about half the samples would have a higher TPH concentration than the sum of the carbon ranges. In addition, a perfect one-to-one correlation between different methods like infrared spectrophotometry and gas chromatography is unlikely because they measure different things (optical dispersion versus separation and detection through a capillary tube). Also, the TPH method (418.1) measures between the carbon range C10 to C45, and the Massachusetts method measures between C5 to C36. While the gap between carbon range C36 and C45 could account for some of the difference between the TPH data and the carbon range sum, the toxicity of surrogates in this range are so low and of such little consequence that carbon ranges higher than C36 have been excluded from the new Texas Risk Reduction Program. From a crude oil source, compounds from the C36 to C48 range would be heavy asphaltic or coke fractions and would be solids at atmospheric pressure and room temperature.

Because of these issues, we believe that no adverse conclusions be drawn from the fact that the TPH concentration and the sum of the carbon ranges are not equal. The difference becomes a portion of variation within the model. The important factor is the total variation or robustness of the model. The correlation coefficients demonstrate that there is a strong relationship between TPH concentration and the concentrations of the carbon ranges. The correlation coefficients range from 0.693 to 0.947 (-1 a perfect negative linear correlation, zero indicates no linear relationship, and 1 is a perfect positive linear correlation). The coefficients of determination (or  $r^2$ ) range from 0.480 to 0.896, and indicate the proportion of the total deviation that is explained by the model.

Issue: In the fourth paragraph of the POCCA letter, it states, "Further, the regression analysis has merit only if the number of samples adequately represents the size of the property (both vertical and lateral) to statistically delineate the extent of the TPH contamination."

Fina's Response: The regression analysis needs only the proper number of samples and variation in the data values. The Port's statement would be valid if the spilled material had significantly different chemical compositions and the soils across the site were heterogeneous. However, neither is the case. The soils are very homogeneous and no party has claimed that the spilled material was anything other than crude oil. The only non-spill related material is the tar ball material from the 1979 Ixtoc well blowout in the Bay of Campeche that produced a crude oil slick that made its way to Texas. Fina accepted some of the tar material and placed it in its onsite landfarm.

Fina had foreseen the argument for spatial diversity in the sampling, and so samples were collected from every impacted area on site, and samples were collected from both 2 feet and 4 feet below grade.



0 0 0 0 2 0 3 2 5 8  
Integrated  
Environmental  
Solutions

Attachment B  
Page 6 of 28  
615 North Upper Broadway  
Suite 980  
Corpus Christi, TX 78477-0301  
Telephone: 361-882-3839  
Fax: 361-882-3407

November 16, 1999

Ms. Leslie Savage  
Assistant Director, Environmental Services  
Railroad Commission of Texas  
1701 N. Congress  
Austin, Texas 78711-2967

RECEIVED  
R.R.C. OF TEXAS

NOV 17 1999

O.G. - ENV. SERV.  
AUSTIN, TEXAS

Subject: Harbor Island Cleanup Level

Dear Ms. Savage:

As a follow-up to our September 21, 1999 letter requesting consideration of our cleanup level approach, we are providing the analytical data sheets for your use. Total Petroleum Hydrocarbons was analyzed by EPA-600 418.1. The carbon range breakdown analysis was analyzed by MADEP-VPH/MADEP-EPH. The leachate extractions were performed by the Synthetic Precipitation Leaching Procedure (SPLP) EPA-Method No. 1312, and the extract was analyzed by the MADEP VPH/EPH method. The TPH and carbon range breakdown analyses in Attachment 1. The TPH and leachate sample results are included in Attachment 2. The analytical methods employed and the risk based procedure that was used were specified in the March 2, 1999 TNRCC interoffice memo from Mike Frew of VCS to Chuck Epperson of VCS. This TNRCC memo is included as Attachment 3. Summaries of the MADEP VPH and MADEP EPH methods are included in Attachment 4.

In an October 14, 1999 letter from Dipak Desai of the Port of Corpus Christi Authority (POCCA) to Ms. Diane Combs of Fina Oil and Chemical, Mr. Desai provided comments on the statistical evaluation that was performed. Since this letter was copied to you, we must address his comments as follows:

Issue: In the third paragraph of the letter, POCCA states, "We feel that the coefficient of correlation has real meaning only when the arithmetic sum of the different carbon ranges and the total hydrocarbon concentration has relevance through consistency and accountability, in that the sum of the ranges, undetected values, and totals add up of have a consistent explainable relationship formulated from unique samples, each associated with the same analytical method."

Fina's Response: POCCA is correct in pointing out that the TPH concentration and the sum of the various carbon range breakdown data are not equal. For about half of the samples, the carbon range data added up to more than the TPH total. Conversely, about half the samples had a higher TPH concentration than the sum of the carbon ranges. POCCA is aware that any two sample aliquots drawn from the same sample jar will not produce the same exact concentration because of the

**PRELIMINARY DRAFT**

**5.0 CONCLUSIONS**

The data collected during this Phase I investigation of the subject property is currently being reviewed and evaluated. Conclusions pertaining to potential environmental issues will be included in the final report, which will be completed following a meeting that we understand will be held with the Texas Railroad Commission.

PRELIMINARY DRAFT

TABLE 8

SUMMARY OF TPH ANALYSIS  
PROPERTY TRACTS 1, 2, & 3 SAMPLES  
HARBOR ISLAND PROJECT

SAMPLE ID	DEPTH	DATE	TPH	SAMPLE ID	DEPTH	DATE	TPH
SBTT1-01-0-2'	0-2 FT	01/17/95	65 PPM	SBTT2-04-0-2'	0-2 FT	01/16/95	<20 PPM
SBTT1-01-2-4'	2-4 FT	01/17/95	37 PPM	SBTT2-05-0-2'	0-2 FT	01/16/95	<20 PPM
SBTT1-02-0-2'	0-2 FT	01/17/95	65 PPM	SBTT2-06-0-2'	0-2 FT	01/16/95	26 PPM
SBTT1-03-0-2'	0-2 FT	01/17/95	49 PPM	SBTT2-07-0-2'	0-2 FT	01/16/95	<20 PPM
SBTT1-04-0-3'	0-3 FT	01/17/95	30 PPM	SBTT2-08-0-2'	0-2 FT	01/17/95	40 PPM
SBTT1-05-0-1'	0-1 FT	01/17/95	36 PPM	SBTT2-09-0-2'	0-2 FT	01/17/95	262 PPM
SBTT1-06-0-2'	0-2 FT	01/17/95	<20 PPM	SBTT3-01-0-1'	0-1 FT	01/16/95	26 PPM
SBTT1-06-10' (0-2) DUP	0-2 FT	01/17/95	<20 PPM	SBTT3-02-0-1'	0-1 FT	01/16/95	<20 PPM
SBTT1-07-0-2'	0-2 FT	01/17/95	227 PPM	SBTT3-03-0-1'	0-1 FT	01/16/95	35 PPM
SBTT1-08-0-2'	0-2 FT	01/17/95	23 PPM	SBTT3-04-0-1'	0-1 FT	01/16/95	<20 PPM
SBTT1-09-0-2'	0-2 FT	01/17/95	<20 PPM	SBTT3-05-0-1'	0-1 FT	01/16/95	<20 PPM
SBTT2-01-0-1'	0-1 FT	01/16/95	<20 PPM	SBTT3-06-0-1'	0-1 FT	01/16/95	<20 PPM
SBTT2-02-0-1'	0-1 FT	01/16/95	<20 PPM	SBTT3-07-0-1'	0-1 FT	01/16/95	<20 PPM
SBTT2-03-0-1'	0-1 FT	01/16/95	<20 PPM	SBTT3-08-0-1'	0-1 FT	01/16/95	<20 PPM
SBTT2-03-10' (0-1) DUP	0-1 FT	01/16/95	<20 PPM				

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**PRELIMINARY DRAFT**

organic compounds were detected at the landfarm. Barium was detected in all six samples analyzed for RCRA metals, and lead was detected in four of the six samples. Low levels of mercury were detected in the original samples collected at the landfarm. The samples were reanalyzed to ensure that mercury was present in the landfarm. Because the reanalyzed results (shown in parentheses in Table 4) were similar to the original results, it appears that low levels of mercury are present in the landfarm.

**4.7 PROPERTY TRACTS**

A cursory investigation was conducted on the three vacant tracts of land potentially included in the transaction. Due to the shallow saturated zone, borings were manually advanced. TPH concentrations ranged from ND to 262 ppm. TPH results are summarized on Table 8.

PROPERTY TRACT 1

Property Tract 1 a 177.89-acre island located north of the Aransas Channel. Nine borings were advanced on the island. Boring 01 is located on the southeast corner of the tract. Borings 02 through 05 were advanced in the center of Tract 1 in an area where dredging activities apparently had occurred. Borings 06 through 09 were advanced on the western portion of Tract 1. The samples collected from Tract 1 were analyzed for TPH and RCRA Metals only. TPH concentrations range from ND to 227 ppm. As indicated in Table 4, barium was detected in five of the samples collected. No other RCRA metals were detected in Property Tract 1.

PROPERTY TRACTS 2 and 3

Property Tract 2 and Property Tract 3 are 39.56-acres of land located between the terminal access road and the Aransas Channel. Property Tract 3 is a 13.28-acre tract of land that begins parallel to the eastern corner of the landfarm and extends in a northwesterly direction to Property Tract 2. Property Tract 2 is a 26.28-acre tract of land that borders the western portion of Property Tract 3 and extends northwest to the Aransas Channel. Seventeen borings were advanced on Property Tracts 2 and 3. Boring 01 of Property Tract 3 was advanced parallel to the landfarm north of the terminal access road. Borings were advanced every 300 feet west of boring 01, for a total of 8 borings. The borings for Property Tract 2 began 300 feet west of boring 08 for Property Tract 3, and were advanced every 300 feet west of this location. A total of 9 borings were advanced on Property Tract 2. TPH concentrations detected in the 17 samples collected in Property Tracts 2 and 3 ranged from ND to 262 ppm.

PRELIMINARY DRAFT

is located adjacent to boring 04. The sample collected from boring 04 was analyzed for PCBs, and no PCBs were detected.

LIFT STATION B

Lift Station B is located on the northeast corner of the tank terminal, next to the loading docks. Three borings were advanced at Lift Station B. TPH concentrations ranged from 61 ppm to 20,800 ppm. Analysis of samples SBLSB-01-0-2', SBLSB-01-6-8', and SBLSB-03-6-8' detected concentrations of TPH exceeding 5,000 ppm; however, organic compounds were not detected at Lift Station B. Analysis of sample SBLSB-01-0-2' detected barium, chromium, and lead at concentrations of 122 ppm, 7 ppm, and 18 ppm, respectively. Analysis of sample SBLSB-03-6-8' detected barium, chromium, and lead at concentrations of 237 ppm, 83 ppm, and 44 ppm, respectively.

**4.5 STORAGE AREAS**

The storage areas are located in an open area on the southern portion of the tank terminal, south of Tank 713. TPH concentrations in samples collected in this area ranged from ND to 64 ppm. A summary of TPH results is presented on Table 7.

WOODEN STORAGE AREA

The wooden storage area is a wooden platform approximately 10 feet wide, 10 feet long and 6 feet in height. An AST is located at the front of the platform. Various metal machine parts and electrical equipment are on the platform. Four borings were advanced around the platform. TPH concentrations ranged from ND to 64 ppm. PCBs analysis was conducted on samples collected from this area and no PCBs were detected.

STORAGE SHED AREA

Two small metal buildings are located next to the wooden storage area. Various metal parts, used oil booms, and unlabeled 55-gallon drums are stored in this area. Three borings were advanced in the storage shed area. TPH concentrations ranged from ND to 59 ppm.

**4.6 LANDFARM**

*Tank bottoms  
12TAR Blow out - Corps put tar bars there*

The landfarm is a plowed area approximately 2-acres in size. The landfarm is located on the northwest corner of the tank terminal. Five borings were manually advanced using stainless steel hand augers in the landfarm. Samples were collected at depths of 0 to 2 feet and 2 to 4 feet. TPH concentrations ranged from 42 ppm to 60,500 ppm. Six of the eight samples collected exceeded 5,000 ppm and were analyzed for VOCs, SVOCs, and RCRA metals. A summary of the TPH results for the landfarm is presented on Table 7. Methylene chloride was detected in the original samples collected at the landfarm. As noted earlier, because methylene chloride is a common laboratory artifact, the landfarm was resampled and the samples were reanalyzed. Methylene chloride was not detected in the reanalyzed samples. No other volatile or semivolatile

PRELIMINARY DRAFT

TABLE 6

SUMMARY OF TPH ANALYSIS  
TRASH AREA SAMPLES

HARBOR ISLAND PROJECT

TRASH AREA SAMPLE ID	DEPTH	DATE	TPH	TRASH AREA SAMPLE ID	DEPTH	DATE	TPH
SBTRA-01-0-2	0-2 FT	01/09/95	25 PPM	SBTRC-05-0-2	0-2 FT	01/11/95	4,200 PPM
SBTRA-01-2-4	2-4 FT	01/09/95	55 PPM	SBTRC-05-2-4	2-4 FT	01/11/95	2,420 PPM
SBTRA-02-0-2	0-2 FT	01/09/95	84 PPM	SBTRC-05-10' (2-4) DUP	2-4 FT	01/11/95	32 PPM
SBTRA-02-2-4	2-4 FT	01/09/95	46 PPM	SBTRC-06-0-2	0-2 FT	01/11/95	340 PPM
SBTRA-03-0-2	0-2 FT	01/10/95	193 PPM	SBTRC-06-2-4	2-4 FT	01/11/95	<20 PPM
SBTRA-03-10' (0-2) DUP	0-2 FT	01/10/95	<20 PPM	SBTRD-01-0-2	0-2 FT	01/11/95	1,040 PPM
SBTRA-03-2-4	2-4 FT	01/09/95	67 PPM	SBTRD-02-0-2	0-2 FT	01/11/95	2,330 PPM
SBTRB-01-0-2	0-2 FT	01/10/95	76 PPM	SBTRD-03-0-2	0-2 FT	01/11/95	23,300 PPM
SBTRB-02-0-2	0-2 FT	01/10/95	133 PPM	SBTRD-04-0-2	0-2 FT	01/12/95	655 PPM
SBTRB-03-0-2	0-2 FT	01/10/95	85 PPM	SBTRD-05-0-2	0-2 FT	01/12/95	536 PPM
SBTRC-01-0-2	0-2 FT	01/11/95	8,020 PPM	SBTRD-06-0-2	0-2 FT	01/12/95	13,600 PPM
SBTRC-01-2-4	2-4 FT	01/11/95	15,000 PPM	SBTRD-06-2-4	2-4 FT	01/12/95	4,880 PPM
SBTRC-02-0-2	0-2 FT	01/11/95	1,330 PPM	SBTRE-01-0-2	0-2 FT	01/10/95	78 PPM
SBTRC-02-4-6	4-6 FT	01/11/95	16,100 PPM	SBTRE-02-0-2	0-2 FT	01/10/95	29,700 PPM
SBTRC-03-0-2	0-2 FT	01/11/95	336 PPM	SBTRE-02-10' (0-2) DUP	0-2 FT	01/10/95	5,970 PPM
SBTRC-03-2-4	2-4 FT	01/11/95	728 PPM	SBTRE-03-0-2	0-2 FT	01/10/95	6,270 PPM
SBTRC-04-0-2	0-2 FT	01/11/95	348 PPM	SBTRE-03-2-4	2-4 FT	01/10/95	5,150 PPM
SBTRC-04-2-4	2-4 FT	01/11/95	<20 PPM				

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PRELIMINARY DRAFT

TABLE 5  
SUMMARY OF TPH ANALYSES  
TERMINAL PERIMETER SAMPLES  
HARBOR ISLAND PROJECT

TERMINAL PERIMETER SAMPLE ID	DEPTH	DATE	TPH	TERMINAL PERIMETER SAMPLE ID	DEPTH	DATE	TPH
SBP-01-0-2	0-2 FT	01/09/95	<20 PPM	SBP-13-0-2	0-2 FT	01/10/95	563 PPM
SBP-02-0-2	0-2 FT	01/13/95	<20 PPM	SBP-13-4-6	4-6 FT	01/10/95	99 PPM
SBP-03-0-2	0-2 FT	01/09/95	179 PPM	SBP-14-0-2	0-2 FT	01/11/95	742 PPM
SBP-04-0-2	0-2 FT	01/09/95	303 PPM	SBP-14-6-8	6-8 FT	01/11/95	<20 PPM
SBP-04-2-4	2-4 FT	01/09/95	303 PPM	SBP-15-0-2	0-2 FT	01/11/95	<20 PPM
SBP-05-0-2	0-2 FT	01/10/95	128 PPM	SBP-15-6-8	6-8 FT	01/11/95	48 PPM
SBP-05-10'(0-2) DUP	0-2 FT	01/10/95	991 PPM	SBP-16-0-2	0-2 FT	01/11/95	<20 PPM
SBP-05-2-4	2-4 FT	01/09/95	110 PPM	SBP-16-2-4	2-4 FT	01/11/95	79 PPM
SBP-06-0-2	0-2 FT	01/09/95	362 PPM	SBP-16-10'(2-4) DUP	2-4 FT	01/11/95	<20 PPM
SBP-06-2-4	2-4 FT	01/09/95	<20 PPM	SBP-17-0-2	0-2 FT	01/11/95	965 PPM
SBP-07-0-2	0-2 FT	01/09/95	421 PPM	SBP-17-2-4	2-4 FT	01/11/95	1,000 PPM
SBP-07-2-4	2-4 FT	01/09/95	53 PPM	SBP-18-0-2	0-2 FT	01/09/95	979 PPM
SBP-08-0-2	0-2 FT	01/10/95	51 PPM	SBP-18-2-4	2-4 FT	01/09/95	5,050 PPM
SBP-08-4-6	4-6 FT	01/10/95	23,900 PPM	SBP-19-0-2	0-2 FT	01/09/95	791 PPM
SBP-08-10'(4-6) DUP	4-6 FT	01/10/95	21,100 PPM	SBP-19-2-4	2-4 FT	01/10/95	5,240 PPM
SBP-09-0-2	0-2 FT	01/10/95	82 PPM	SBP-19-10'(2-4) DUP	2-4 FT	01/10/95	5,970 PPM
SBP-09-2-4	2-4 FT	01/10/95	46 PPM	SBP-20-0-2	0-2 FT	01/11/95	<20 PPM
SBP-10-0-2	0-2 FT	01/10/95	68 PPM	SBP-20-2-4	2-4 FT	01/11/95	33 PPM
SBP-10-2-4	2-4 FT	01/10/95	73 PPM	SBP-21-0-2	0-2 FT	01/11/95	2,860 PPM
SBP-11-0-2	0-2 FT	01/10/95	264 PPM	SBP-21-2-4	2-4 FT	01/11/95	<20 PPM
SBP-11-2-4	2-4 FT	01/10/95	216 PPM	SBP-22-0-2	0-2 FT	01/13/95	817 PPM
SBP-12-0-2	0-2 FT	01/10/95	3,480 PPM	SBP-23-0-2	0-2 FT	01/11/95	858 PPM
SBP-12-4-6	4-6 FT	01/10/95	228 PPM	SBP-24-0-2	0-2 FT	01/13/95	<20 PPM

PRELIMINARY DRAFT

#### 4.2 TERMINAL PERIMETER

Borings from the terminal perimeter were advanced starting at the northwest boundary of the tank terminal and progressing south and east in a counterclockwise direction approximately every 500 feet. Twenty-four borings were advanced around the terminal perimeter. Samples were collected at depths ranging from 0 to 8 feet. The saturated zone was encountered as shallow as one to two feet on the north side of the terminal, and at depths of up to 8 feet on the south side of the terminal adjacent to the Exxon facility. TPH concentrations ranged from ND to 23,900 ppm. A summary of TPH results for the terminal perimeter is presented in Table 5. Additional detail for those borings containing greater than 5,000 ppm TPH is presented below.

Perimeter boring 08 is located south of Tank 712 at the southern edge of the property. TPH was detected in the zero to two foot depth at a concentration of 51 ppm; however, a TPH concentration of 23,900 ppm was detected at a depth of 4 to 6 feet. Fluorene, 2-methylnaphthalene, naphthalene, and phenanthrene were detected in sample SBP-08-4-6'. Barium was also detected in this sample at a concentration of 8 ppm.

TPH concentrations were above 5,000 ppm at perimeter boring 18 and 19. These borings are located adjacent to and north of the landfarm. Organic compounds were not detected in the samples. Barium was detected at 11 ppm and 15 ppm at perimeter borings 18 and 19, respectively.

#### 4.3 TRASH AREAS

During the initial site walk-through, Fina personnel at the facility identified five areas of the site that had been used in the past as general trash and scrap materials areas. For identification purposes, these areas are labeled A through E. Borings were advanced to the saturated zone in each area at pre-determined staked locations. TPH concentrations ranged from ND to 29,700 ppm. A summary of TPH results for the trash areas is presented on Table 6.

##### TRASH AREA A

Trash Area A is located along the southwest perimeter of the tank terminal. Trash Area A is approximately 2,000 square feet, and contained trash and scrap metal refuse. Three borings were advanced in this area. Samples from Trash Area A were collected at depths of 0 to 2 feet and 2 to 4 feet. TPH concentrations ranged from ND to 193 ppm. Although TPH concentrations did not exceed 5,000 ppm, one sample was analyzed for RCRA metals due to the presence of scrap metal in the area. Sample SBTRA-03-0-2' contained detections of barium at 12 ppm and lead at 5 ppm.

##### TRASH AREA B

Trash Area B is located on the southwest portion of the tank terminal, between Tank 728 and Tank 714. Three borings were advanced at Trash Area B and samples were collected at a depth of 0 to 2 feet. TPH concentrations ranged from 78 ppm to 133 ppm.

0 0 0 0 2 0 7 2 4 8

**PRELIMINARY DRAFT**

TANK 732

Tank 732 is located on the southeastern portion of the tank terminal, southeast of Tank 731. TPH concentrations ranged from 36 ppm to 3,190 ppm. Samples were collected at depths of 0 to 2 feet and 2 to 4 feet.

TANK 733

Tank 733 is located on the northwestern portion of the tank terminal, adjacent to the landfarm. TPH concentrations ranged from ND to 88 ppm, except for boring 03. Samples collected from boring 03, at 0 to 2 feet, detected TPH at 56,300 ppm. No organic compounds were detected at Tank 733. Barium was detected at a concentration of 6 ppm. Chromium was initially detected at a concentration of 26 ppm but was not detected in the duplicate sample collected at this boring.

TANK 734

Tank 734 is located on the southwest portion of the tank terminal, south of the landfarm. TPH was not detected in borings 01, 02, and 03. Boring 04 had a TPH concentration of 21 ppm.

TANK 735

Tank 735 is located on the southwest portion of the tank terminal, east of Tank 732. TPH concentrations ranged from ND to 3,090 ppm. Samples were collected at depths of 0 to 2 feet and 4 to 6 feet.

Diesel Tank 725

Tank 725 is located on the northeast portion of the tank terminal, between Tank 713 and Tank 731. Three borings were advanced around the diesel tank. Boring 01 detected TPH concentrations of 46,600 ppm at 0 to 2 feet; TPH was not detected at boring 02; and, boring 03 detected a TPH concentration of 365 ppm at 0 to 2 feet and 19,700 ppm at 2 to 4 feet.

Soil samples SBD-01-0-2' and SBD-03-2-4' were analyzed for VOCs, SVOCs, and RCRA metals. Fluorene, 2-methylnaphthalene, naphthalene, and phenanthrene were detected in the boring 01 sample. Methylene chloride was also detected in this sample. As noted earlier, because methylene chloride is a common laboratory artifact, the diesel tank was resampled and the samples were reanalyzed. Methylene chloride was not detected in the reanalyzed samples. Barium at 8 ppm and lead at 7 ppm were also detected in the boring 01 sample. VOCs, SVOCs, and RCRA metals were not detected in the sample collected from boring 03.

PRELIMINARY DRAFT

Methylene chloride was also detected in the original samples collected at Tank 712; however, because methylene chloride is a common laboratory artifact, Tank 712 was resampled and the samples were reanalyzed. Methylene chloride was not detected in the reanalyzed samples.

Barium was detected in six of the seven samples collected. Chromium was detected in one sample, and lead was detected in three of the seven samples.

TANK 713

Tank 713 is located in the center of the tank terminal, west of Tank 708 and north of the wooden storage platform. Samples around Tank 713 were collected at depths of 0 to 2 feet. TPH concentrations ranged from 24 ppm to 28,400 ppm. Sample SBTK713-02-0-2' was analyzed for VOCs, SVOCs, and RCRA metals. No organic compounds were detected in the sample.

TANK 714

Tank 714 is located on the western portion of the site, near the southern fence. Samples were collected at 0 to 2 feet and TPH concentrations ranged from 41 ppm to 1,070 ppm.

TANK 728

Tank 728 is located on the western portion of the tank terminal, immediately west of Tank 714. TPH was not detected in borings 01, 02, and 03. Boring 04 had a TPH concentrations of 21 ppm.

TANK 731

Tank 731 is located on the northeastern portion of the tank terminal, east of Diesel Tank 725. TPH concentrations below 100 ppm were detected at Tank 731, except for boring 04. Boring 04 is located on the northeast side of Tank 731 and detected TPH concentrations of 16,900 ppm at 0 to 2 feet and 16,000 ppm at 2 to 4 feet. Benzene, ethylbenzene and total xylenes were detected in both samples collected from boring 04 at Tank 731. 2-methylnaphthalene, naphthalene, and phenanthrene were also detected in the 2 to 4 feet depth of boring 4. Methylene chloride was present in the original samples collected at Tank 731; however, because methylene chloride is a common laboratory artifact, Tank 731 was resampled and the samples were reanalyzed. Methylene chloride was not detected in the reanalyzed samples. Barium was detected in both boring 04 samples, and lead was detected in the sample collected from a depth of two to four feet. Although mercury was detected in the original two to four foot sample collected in boring 04 of Tank 731, the sample was reanalyzed two more times to determine if there was an analytical error. In both reanalyses, mercury was not detected above the detection limit.

**TABLE 4**  
**SUMMARY OF RCRA METALS ANALYSIS**  
**HARBOR ISLAND PROJECT**

TANK AREA	BARIUM	CHROMIUM	LEAD	MERCURY
SBTK710-04-0-2	8 PPM	18 PPM	23 PPM	ND
SBTK711-01-0-1	8 PPM	38 PPM	24 PPM	ND
SBTK711-02-0-1	93 PPM	12 PPM	26 PPM	ND
SBTK711-03-0-1	6 PPM	ND	ND	ND
SBTK711-04-0-1	17 PPM	6 PPM	13 PPM	ND
SBTK712-01-0-2	19 PPM	7 PPM	7 PPM	ND
SBTK712-01-2-4	6 PPM	ND	ND	ND
SBTK712-01-10	8 PPM	ND	ND	ND
SBTK712-02-0-2	ND	ND	5 PPM	ND
SBTK712-03-0-2	7 PPM	ND	ND	ND
SBTK712-03-2-4	5 PPM	ND	ND	ND
SBTK712-04-0-2	34 PPM	ND	8 PPM	ND
SBTK712-04-2-4	5 PPM	ND	ND	ND
SBTK731-04-0-2	14 PPM	ND	ND	ND
SBTK731-04-2-4	17 PPM	ND	5 PPM	0.23 PPM (<0.09)
SBTK731-04-10	31 PPM	ND	5 PPM	ND
SBTK733-03-0-2	6 PPM	26 PPM	ND	ND
SBTK733-03-10	8 PPM	ND	ND	ND
SBD-01-0-2	8 PPM	ND	7 PPM	ND
<b>TRASH AREAS</b>	<b>BARIUM</b>	<b>CHROMIUM</b>	<b>LEAD</b>	<b>MERCURY</b>
SBTRA-03-0-2	12 PPM	ND	5 PPM	ND
SBTRC-01-0-2	16 PPM	ND	8 PPM	ND
SBTRC-02-4-6	17 PPM	ND	ND	ND
SBTRD-06-0-2	14 PPM	ND	8 PPM	ND
SBTRE-02-0-2	6 PPM	ND	ND	ND
SBTRE-02-10	50 PPM	8 PPM	7 PPM	ND
SBTRE-03-0-2	31 PPM	5 PPM	12 PPM	ND
<b>LAND FARM</b>	<b>BARIUM</b>	<b>CHROMIUM</b>	<b>LEAD</b>	<b>MERCURY</b>
SBLF-01-0-2	48 PPM	ND	11 PPM	0.17 PPM (0.16)
SBLF-03-0-2	32 PPM	ND	8 PPM	0.16 PPM (0.11)
SBLF-03-2-4	36 PPM	ND	8 PPM	0.14 PPM (0.15)
SBLF-04-0-2	26 PPM	ND	9 PPM	0.12 PPM (0.12)
SBLF-04-2-4	6 PPM	ND	ND	ND
SBLF-05-0-2	21 PPM	ND	ND	ND
<b>TERMINAL PERIMETER</b>	<b>BARIUM</b>	<b>CHROMIUM</b>	<b>LEAD</b>	<b>MERCURY</b>
SBP-08-4-6	8 PPM	ND	ND	ND
SBP-08-10	6 PPM	ND	ND	ND
SBP-18-2-4	11 PPM	ND	ND	ND
SBP-19-2-4	15 PPM	ND	ND	ND
SBP-19-10	5 PPM	ND	ND	ND
<b>PROPERTY TRACTS</b>	<b>BARIUM</b>	<b>CHROMIUM</b>	<b>LEAD</b>	<b>MERCURY</b>
SBTT1-01-0-2	5 PPM	ND	ND	ND
SBTT1-01-2-4	6 PPM	ND	ND	ND
SBTT1-02-0-2	7 PPM	ND	ND	ND
SBTT1-05-0-1	5 PPM	ND	ND	ND
SBTT1-08-0-2	9 PPM	ND	ND	ND
<b>LIFT STATIONS</b>	<b>BARIUM</b>	<b>CHROMIUM</b>	<b>LEAD</b>	<b>MERCURY</b>
SBLSA-02-0-2	20 PPM	ND	5 PPM	ND
SBLSA-03-0-2	9 PPM	ND	8 PPM	ND
SBLSB-01-0-2	122 PPM	7 PPM	18 PPM	ND
SBLSB-03-6-8	237 PPM	83 PPM	44 PPM	ND

ND - Not Detected

**NOTES:**

- 1.) All results are reported as total RCRA metals
- 2.) Table only includes samples containing detected concentrations

PRELIMINARY DRAFT

TABLE 3

SUMMARY OF ORGANIC COMPOUNDS ANALYSES

HARBOR ISLAND PROJECT

COMPOUNDS	SBTK712-01-2-4'	SBTK712-01-10'(2-4)	SBTK712-02-0-2'	SBTK712-03-0-2'	SBTK712-03-2-4'
Benzene	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND
Total Xylene	ND	ND	ND	ND	ND
Fluorene	7.3 PPM	ND	ND	ND	ND
2-Methylnaphthalene	65 PPM	11 PPM	23 PPM	35 PPM	7.5 PPM
Naphthalene	33 PPM	ND	9.7 PPM	22 PPM	77 PPM
Phenanthrene	11 PPM	ND	4.2 PPM	ND	42 PPM
					11 PPM

COMPOUNDS	SBTK712-04-2-4'	SBTK731-04-0-2'	SBTK731-04-2-4'	SBTK731-04-10'(2-4)	SSD-01-0-2'
Benzene	ND	19 PPM	12 PPM	1.4 PPM	ND
Ethylbenzene	ND	6.7 PPM	26 PPM	2.3	ND
Total Xylene	ND	27 PPM	36 PPM	5.8 PPM	ND
Fluorene	3.4 PPM	ND	ND	ND	ND
2-Methylnaphthalene	30 PPM	ND	26 PPM	14 PPM	4.8 PPM
Naphthalene	17 PPM	ND	16 PPM	11 PPM	18 PPM
Phenanthrene	5.1 PPM	ND	4.9 PPM	3.32 PPM	6.0 PPM
					6.9 PPM

COMPOUNDS	SBP-08-4-6'	SBP-08-10'(4-6)	SBTRE-02-0-2'	SBLSA-03-0-2'	SBLSA-03-2-3'
Benzene	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	0.91 PPM	3.9 PPM
Total Xylene	ND	ND	ND	2.9 PPM	29 PPM
Fluorene	2.4 PPM	3.2 PPM	ND	ND	ND
2-Methylnaphthalene	25 PPM	26 PPM	5.6 PPM	ND	14 PPM
Naphthalene	8.6 PPM	7.7 PPM	ND	ND	6.4 PPM
Phenanthrene	4.0 PPM	5.2 PPM	ND	ND	ND

ND - NOT DETECTED  
51655-001-00/PF6 1

PRELIMINARY DRAFT

TANK 708

Tank 708 is located in the center of the tank terminal, across from the office. The samples for Tank 708 were collected a depth of 0 to 1 foot. TPH concentrations ranged from 459 ppm to 2,230 ppm.

TANK 709

Tank 709 is located immediately south of Tank 708. TPH concentrations for Tank 709 were ND, except for boring 01. Boring 01 detected a TPH concentrations of 1,230 ppm. The samples for Tank 709 were collected at a depth of 0 to 2 feet.

TANK 710

Tank 710 is located in the center of the tank terminal, south of Lift Station A. Samples were collected at a depth of 0 to 2 feet. TPH concentrations for Tank 710 ranged from ND to 5,970 ppm. Sample SBTk710-04-0-2' was analyzed for VOCs, SVOCs, and RCRA metals. Organic compounds were not detected in the sample. Barium, chromium, and lead were detected in the sample. A summary of organic and RCRA metals results are provided in Tables 3 and 4, respectively.

TANK 711

Tank 711 is located in the center of the tank terminal, across from the bunkhouse. TPH concentrations were 9,220 ppm at boring 01, 59,800 at boring 02, 18,800 at boring 03, and 43,800 ppm at boring 04. No organic compounds were detected at Tank 711. Barium was detected in each of the four samples collected, and chromium and lead were detected in three of the four samples. No other RCRA metals were present above the detection limit. All samples collected at Tank 711 were at a depth of 0 to 1 foot.

TANK 712

Tank 712 is located in the center of the tank terminal, immediately south of Tank 711. Boring 01 of Tank 712 detected TPH concentrations of 7,810 ppm at 0 to 2 feet and 22,900 ppm at 2 to 4 feet; boring 02 detected 14,300 ppm at 0 to 2 feet; boring 03 detected 37,200 ppm at 0 to 2 feet and 52,900 ppm at 2 to 4 feet; and, boring 04 of Tank 712 detected TPH concentrations of 12,400 ppm at 0 to 2 feet and 8,220 ppm at 2 to 4 feet. All seven on the samples collected at Tank 712 exceeded 5,000 ppm TPH, and were analyzed for VOCs, SVOCs, and RCRA metals. Fluorene, 2-methylnaphthalene, naphthalene, and phenanthrene were detected in the samples for Tank 712. As indicated in Table 3, fluorene concentrations ranged from ND to 7.5 ppm; 2-methylnaphthalene concentrations ranged from 11 ppm to 77 ppm; naphthalene concentrations ranged from ND to 42 ppm; and phenanthrene concentration ranged from ND to 11 ppm.

TABLE 2  
SAMPLE LOCATIONS WITH TPH CONCENTRATIONS > 5,000 PPM  
HARBOR ISLAND PROJECT

TANK AREA SAMPLES	DEPTH	DATE	TPH	TRASH AREA SAMPLES	DEPTH	DATE	TPH
SBTK710-04-0-2	0-2 FT	01/12/95	5,970 PPM	SBTRC-01-0-2	0-2 FT	01/11/95	8,020 PPM
SBTK711-01-0-1	0-1 FT	01/16/95	9,220 PPM	SBTRC-01-2-4	2-4 FT	01/11/95	15,000 PPM
SBTK711-02-0-1	0-1 FT	01/16/95	59,800 PPM	SBTRC-02-4-6	4-6 FT	01/11/95	16,100 PPM
SBTK711-03-0-1	0-1 FT	01/16/95	18,600 PPM	SBTRD-03-0-2	0-2 FT	01/11/95	23,300 PPM
SBTK711-04-0-1	0-1 FT	01/16/95	43,800 PPM	SBTRD-06-0-2	0-2 FT	01/12/95	13,600 PPM
SBTK712-01-0-2	0-2 FT	01/12/95	7,810 PPM	SBTRE-02-0-2	0-2 FT	01/10/95	29,700 PPM
SBTK712-01-2-4	2-4 FT	01/12/95	22,900 PPM	SBTRE-02-10 (0-2) DUP	0-2 FT	01/10/95	5,970 PPM
SBTK712-01-10 (2-4) DUP	2-4 FT	01/12/95	11,000 PPM	SBTRE-03-0-2	0-2 FT	01/10/95	8,270 PPM
SBTK712-02-0-2	0-2 FT	01/12/95	14,300 PPM	SBTRE-03-2-4	2-4 FT	01/10/95	5,150 PPM
SBTK712-03-0-2	0-2 FT	01/12/95	37,200 PPM	LIFT STATION AREA SAMPLES	DEPTH	DATE	TPH
SBTK712-03-2-4	2-4 FT	01/12/95	52,900 PPM	SBLSA-02-0-2	0-2 FT	01/12/95	15,600 PPM
SBTK712-04-0-2	0-2 FT	01/12/95	12,400 PPM	SBLSA-03-0-2	0-2 FT	01/12/95	5,340 PPM
SBTK712-04-2-4	2-4 FT	01/12/95	8,220 PPM	SBLSA-03-2-3	2-3 FT	01/12/95	24,800 PPM
SBTK713-02-0-2	0-2 FT	01/13/95	28,400 PPM	SBLSB-01-0-2	0-2 FT	01/11/95	5,720 PPM
SBTK731-04-0-2	0-2 FT	01/13/95	16,900 PPM	SBLSB-01-6-8	6-8 FT	01/11/95	14,300 PPM
SBTK731-04-2-4	2-4 FT	01/13/95	16,000 PPM	SBLSB-03-6-8	6-8 FT	01/11/95	20,800 PPM
SBTK731-04-10 (2-4) DUP	2-4 FT	01/13/95	10,200 PPM	PERIMETER SAMPLES	DEPTH	DATE	TPH
SBTK733-03-0-2	0-2 FT	01/16/95	56,300 PPM	SBP-08-4-6	4-6 FT	01/10/95	23,900 PPM
SBTK733-03-10 (2-3) DUP	2-3 FT	01/16/95	15,100 PPM	SBP-08-10 (4-6) DUP	4-6 FT	01/10/95	21,000 PPM
DIESEL TANK - 725 SAMPLES	DEPTH	DATE	TPH	SBP-18-2-4	2-4 FT	01/09/95	5,050 PPM
SBD-01-0-2	0-2 FT	01/13/95	46,600 PPM	SBP-19-2-4	2-4 FT	01/10/95	5,240 PPM
SBD-03-2-4	2-4 FT	01/13/95	19,700 PPM	SBP-19-10 (2-4) DUP	2-4 FT	01/10/95	5,970 PPM
LAND FARM AREA SAMPLES	DEPTH	DATE	TPH				
SBLF-01-0-2	0-2 FT	01/13/95	52,700 PPM				
SBLF-03-0-2	0-2 FT	01/13/95	43,400 PPM				
SBLF-03-2-4	2-4 FT	01/13/95	44,600 PPM				
SBLF-04-0-2	0-2 FT	01/13/95	60,500 PPM				
SBLF-04-2-4	2-4 FT	01/13/95	32,200 PPM				
SBLF-05-0-2	0-2 FT	01/13/95	8,400 PPM				

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PRELIMINARY DRAFT

TABLE 1

SUMMARY OF TPH ANALYSIS  
TANK AREA SAMPLES

HARBOR ISLAND PROJECT

TANK AREA SAMPLE ID	DEPTH	DATE	TPH	TANK AREA SAMPLE ID	DEPTH	DATE	TPH
SBTK708-01-0-1'	0-1 FT	01/16/95	2,230 PPM	SBTK731-01-0-2'	0-2 FT	01/13/95	91 PPM
SBTK708-02-0-1'	0-1 FT	01/16/95	1,050 PPM	SBTK731-01-2-4'	2-4 FT	01/13/95	<20 PPM
SBTK708-03-0-1'	0-1 FT	01/16/95	1,540 PPM	SBTK731-02-0-2'	0-2 FT	01/13/95	66 PPM
SBTK708-04-0-1'	0-1 FT	01/16/95	459 PPM	SBTK731-03-0-2'	0-2 FT	01/13/95	35 PPM
SBTK709-01-0-2'	0-2 FT	01/12/95	1,230 PPM	SBTK731-03-2-4'	2-4 FT	01/13/95	<20 PPM
SBTK709-02-0-2'	0-2 FT	01/12/95	<20 PPM	SBTK731-03-10' (2-4) DUP	2-4 FT	01/13/95	<20 PPM
SBTK709-03-0-2'	0-2 FT	01/12/95	<20 PPM	SBTK731-04-0-2'	0-2 FT	01/13/95	16,900 PPM
SBTK709-04-0-2'	0-2 FT	01/12/95	<20 PPM	SBTK731-04-2-4'	2-4 FT	01/13/95	16,000 PPM
SBTK710-01-0-2'	0-2 FT	01/12/95	420 PPM	SBTK731-04-10' (2-4) DUP	2-4 FT	01/13/95	10,200 PPM
SBTK710-02-0-2'	0-2 FT	01/12/95	<20 PPM	SBTK732-01-0-2'	0-2 FT	01/12/95	169 PPM
SBTK710-03-0-2'	0-2 FT	01/12/95	<20 PPM	SBTK732-02-0-2'	0-2 FT	01/12/95	342 PPM
SBTK710-04-0-2'	0-2 FT	01/12/95	<20 PPM	SBTK732-02-2-4'	2-4 FT	01/12/95	1,120 PPM
SBTK711-01-0-1'	0-1 FT	01/16/95	5,970 PPM	SBTK732-03-0-2'	0-2 FT	01/12/95	36 PPM
SBTK711-02-0-1'	0-1 FT	01/16/95	9,220 PPM	SBTK732-04-0-2'	0-2 FT	01/12/95	3,190 PPM
SBTK711-03-0-1'	0-1 FT	01/16/95	59,800 PPM	SBTK733-01-0-2'	0-2 FT	01/16/95	26 PPM
SBTK711-04-0-1'	0-1 FT	01/16/95	16,800 PPM	SBTK733-02-0-2'	0-2 FT	01/16/95	<20 PPM
SBTK712-01-0-2'	0-2 FT	01/12/95	43,800 PPM	SBTK733-03-0-2'	0-2 FT	01/16/95	56,300 PPM
SBTK712-01-2-4'	2-4 FT	01/12/95	7,810 PPM	SBTK733-03-2-3'	2-3 FT	01/16/95	68 PPM
SBTK712-02-0-2'	0-2 FT	01/12/95	22,900 PPM	SBTK733-03-10' (2-3) DUP	2-3 FT	01/16/95	15,100 PPM
SBTK712-03-0-2'	0-2 FT	01/12/95	11,000 PPM	SBTK733-04-0-2'	0-2 FT	01/16/95	<20 PPM
SBTK712-04-0-2'	0-2 FT	01/12/95	14,300 PPM	SBTK734-01-0-2'	0-2 FT	01/16/95	<20 PPM
SBTK712-03-2-4'	2-4 FT	01/12/95	37,200 PPM	SBTK734-02-0-1'	0-1 FT	01/16/95	<20 PPM
SBTK712-04-0-2'	0-2 FT	01/12/95	52,900 PPM	SBTK734-03-0-1'	0-1 FT	01/16/95	<20 PPM
SBTK712-04-2-4'	2-4 FT	01/12/95	12,400 PPM	SBTK734-04-0-1'	0-1 FT	01/16/95	21 PPM
SBTK713-01-0-2'	0-2 FT	01/13/95	8,220 PPM	SBTK735-01-0-2'	0-2 FT	01/13/95	<20 PPM
SBTK713-02-0-2'	0-2 FT	01/13/95	135 PPM	SBTK735-01-4-6'	4-6 FT	01/13/95	22 PPM
SBTK713-03-0-2'	0-2 FT	01/13/95	28,400 PPM	SBTK735-02-0-2'	0-2 FT	01/13/95	<20 PPM
SBTK713-04-0-2'	0-2 FT	01/13/95	59 PPM	SBTK735-02-4-6'	4-6 FT	01/13/95	<20 PPM
SBTK714-01-0-2'	0-2 FT	01/13/95	24 PPM	SBTK735-03-0-2'	0-2 FT	01/13/95	3,090 PPM
SBTK714-02-0-2'	0-2 FT	01/13/95	1,070 PPM	SBTK735-03-2-4'	2-4 FT	01/13/95	539 PPM
SBTK714-03-0-2'	0-2 FT	01/12/95	41 PPM	SBTK735-04-0-2'	0-2 FT	01/13/95	<20 PPM
SBTK714-04-0-2'	0-2 FT	01/12/95	57 PPM	SBTK735-04-4-6'	4-6 FT	01/13/95	678 PPM
SBTK728-01-0-2'	0-2 FT	01/12/95	60 PPM	SBD-01-0-2	0-2 FT	01/13/95	48,600 PPM
SBTK728-02-0-2'	0-2 FT	01/12/95	<20 PPM	SBD-02-0-2	0-2 FT	01/13/95	<20 PPM
SBTK728-03-0-2'	0-2 FT	01/12/95	<20 PPM	SBD-03-0-2	0-2 FT	01/13/95	<20 PPM
SBTK728-04-0-2'	0-2 FT	01/12/95	21 PPM	SBD-03-2-4	2-4 FT	01/13/95	365 PPM
							19,700 PPM

PRELIMINARY DRAFT

4.0 DATA ASSESSMENT

A review of the analytical results for each area sampled is provided in this section. To ease sample location identification, ICF Kaiser divided the Site into several areas as listed below:

<u>AREA</u>	<u>SAMPLE IDENTIFICATION</u>
Crude Tanks	SBTK "Tank Number"
Diesel Tank	SBD
Land Farm	SBLF
Trash Areas	SBTR "A through E"
Lift Stations	SBSL "A and B"
Terminal Perimeter	SBP
Wooden Storage Platform	SBPCB
Storage Shed Area	SBSS
Property Tract 1	SBTT1
Property Tract 2	SBTT2
Property Tract 3	SBTT3

Each of these areas are discussed in the following sections.

4.1 TANK AREA

There are 14 large aboveground storage tanks (ASTs) at the Fina Terminal. The ASTs have an approximate capacity of 55,000 to 80,000 barrels and are used for the temporary storage of crude oil. Each AST is surrounded by a berm approximately 10 feet in height. A smaller tank is located on the northeast portion of the tank terminal. This 5,000 gallon tank is used for the storage of diesel fuel.

Four borings were advanced in the bermed area, around each tank. The borings were labeled with boring identification numbers 01 through 04 starting on the northwest side of the tanks and progressing in a counterclockwise directions. Due to the size of the tank, only three borings were advanced around the diesel tank. All borings were advanced to the saturated zone, encountered at depths ranging from 1 foot to 6 feet below grade.

The TPH concentrations in the tank areas ranged from not detected above detection limits (ND) to 59,800 parts per million (ppm). A summary of TPH concentrations for the area is presented in Table 1. Samples with TPH concentrations above 5,000 ppm were analyzed for volatile and semivolatle organic compounds and RCRA Metals. Table 2 provides a summary of TPH results above 5,000 ppm for all areas.

## PRELIMINARY DRAFT

Laboratory Program National Functional Guidelines for Inorganic Data Review," February 1994. Specific issues identified by the data validation team are discussed in Section where appropriate.

### 3.3 VARIANCE IN SCOPE OF WORK

The soil investigation focused primarily on the Fina Tank Terminal; however, a cursory investigation was conducted on the other three property tracts potentially included in the transaction.

It was planned that 118 borings were to be advanced at the tank terminal. The borings were to be advanced to the saturated zone, which at the time of the work plan development was unknown and was assumed to be at a depth of 10 feet below grade. It was assumed that two samples would be collected from each boring. The samples were to be analyzed for TPH. A subgroup of samples consisting of 20% of the samples were to be analyzed for VOCs, SVOCs, and RCRA metals. In addition, four samples collected near old electrical equipment would be analyzed for PCBs.

A total of 119 borings were advanced at the tank terminal. The actual boring depths varied between 1 foot and 8 feet. Two samples were collected at 54 of the borings. The samples were analyzed for TPH, and those containing greater than 5,000 mg/kg TPH (approximately 21%) were analyzed for VOCs, SVOCs, and RCRA metals. An additional sample was collected for PCB analysis at Lift Station A, near a pole-mounted transformer.

A cursory investigation was conducted on Property Tracts 1, 2, and 3. Property Tract 1 is 177 acres. It was planned that borings would be advanced every 20 acres. The actual borings were advanced in areas of apparent dredging activity. Samples collected from Property Tract 1 were analyzed for TPH and RCRA metals only. A total of 20 borings were planned for Property Tracts 2 and 3; however, Property Tracts 2 and 3 required only 17 borings.

A total of 147 borings were planned for the Phase I investigation. The actual number of borings advanced was 145. It was estimated that the Phase I field activities would require approximately 12 days. Phase I field activities were completed in 7 days.

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and 7000 Series. In addition five samples were collected near old electrical equipment stored on the wooden platform and a pole-mounted transformer located near lift station A. These samples were analyzed for polychlorinated biphenyls (PCBs) by USEPA Method 8080. Samples collected from Property Tract 1 were analyzed for TPH and total RCRA Metals only. Analysis for leachable organic and inorganic constituents were not performed as part of the Phase I scope of work.

### 3.2 QA/QC PROCEDURES

Duplicate samples were collected at a rate of 1 per 20 samples. Duplicate samples collected in the field are intended to provide a measurable means of evaluating the consistency of sampling methods and techniques. This measure is termed the relative percent difference (RPD) and is determined by the difference between the sample results divided by the average of the sample results. Typically, acceptable soil sampling RPDs are 50% or less.

Due to the volume of material required for all the potential analyses, and the limited sample quantity available from a 2-inch split spoon sampler, duplicate samples were collected by advancing an additional split spoon boring next to the original boring. The duplicate and original samples were not composited because this would invalidate any VOC analyses performed. Therefore, the samples are not "true duplicates" and the RPD results presented in the data validation reports (Appendix C) do not reflect the differences in the same sample. Because the duplicate samples were collected from a separate boring adjacent to the first boring, the analyses of duplicate samples is indicative of the homogeneity of the chemicals of concern at the site. As discussed in Section 4, sample results widely varied between original and duplicate samples indicating a non-homogeneous dispersion of TPH at the site.

A trip blank was collected each morning to determine if any target contaminants were introduced to the samples during the day's sampling event. An equipment blank was collected each day to monitor the efficiency of the decontamination process. After collection, samples were placed in a cooler containing ice and maintained at 4° Celsius.

Chain of Custody (COC)/ Laboratory Analysis Request (LAR) forms, sample labels, and custody seals were utilized for submission of all samples for analysis. The forms indicate the sample location and depth, method of analysis, sample number, date and time of sample collected, name of sampler, project name and location, and date. Copies of the chain of custodies are provided in Appendix B.

ICF Kaiser obtained possession of empty sample coolers and ensured that a trip blank was collected at the beginning of each sampling day. ICF Kaiser, under chain of custody, relinquished samples to PSI at the end of the sampling day. PSI transported the samples to Core Laboratories in Corpus Christi.

The analytical data generated by Core Laboratories was reviewed by the ICF Kaiser Data Validation Group in accordance to the USEPA documents "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review," February 1994, and "USEPA Contract

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### 3.0 SOIL INVESTIGATION

This section provides an overview of the sampling methodology and quality assurance/quality control practices utilized during the soil investigation. Soil sampling locations at the tank terminal were selected based upon a review of available data, conversations with personnel employed at the tank terminal, and a site walk-through. Sampling locations in Tracts 2 and 3 were based on a grid pattern to cover the area of interest. Sampling locations in Tract 1 were also based on a grid pattern, but were modified in the field based upon accessibility.

Soil samples collected at the Site were analyzed for total petroleum hydrocarbons (TPH). A subgroup of samples with a TPH concentration of 5,000 parts per million (ppm) were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs) and RCRA metals. In addition, five samples collected near old electrical equipment were analyzed for polychlorinated biphenyl (PCBs), and all the Tract 1 soil samples were analyzed for RCRA metals to evaluate potential impacts from dredging operations.

#### 3.1 SAMPLING METHODOLOGY

The soil investigation consisted of advancing 145 borings at the Site: 119 borings in the tank terminal area; 9 borings in Tract 1; 9 borings in Tract 2; and 8 borings in Tract 3. Borings were mechanically advanced utilizing hollow stem augers and a 2-inch diameter split-spoon sampling device. Due to a very shallow saturated zone, select borings were advanced manually utilizing stainless steel hand augers. The borings were advanced to the saturated zone which varied between 1 foot and 8 feet below ground surface. All borings were grouted to the surface upon completion of the sampling activities. The boring logs are presented in Appendix B.

All equipment used in the installation of borings, i.e. the drill rig, the augers, the drill rod, etc., were decontaminated prior to use, between each boring, after each sampling event, and upon completion of the investigation. The decontamination procedure consisted of spraying down the equipment with a high pressure steam cleaner.

The sampling equipment was decontaminated using a triple rinse system consisting of 1) analconox wash, 2) a deionized water initial rinse, 3) and a deionized water spray rinse.

Precleaned sample containers with the proper preservatives were provided by the laboratory. Reagent grade de-ionized water was also provided by the laboratory for the collection of trip and equipment blanks.

A total of 199 samples were collected. A single soil sample was collected from 91 borings. Two samples were collected from 54 of the borings. The samples were collected in 4-ounce jars with zero-headspace. The samples collected at the Tank Terminal and Property Tracts 2 & 3 were analyzed for TPH by USEPA Method 418.1. A subgroup of the samples consisting of samples containing TPH concentrations greater than 5,000 mg/kg were analyzed for VOCs by USEPA Method 8260, SVOCs by USEPA Method 8270, and total RCRA Metals by USEPA Methods 6000

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attenuation in signal is indicated in the records, however, it is a localized feature and is not well defined. It occurs along the pipeline as it trends from the Tank 731 bermed area to the Tank 713 bermed area. The area is located from approximately the 40 foot mark to the 50 foot mark along the GPR traverse that was performed adjacent to the pipeline axis on the southwest side. The area offers the highest potential for pipeline leakage. The center of the area is located approximately 35 feet due east and 40 feet due north from the eastern-most tangent point of Diesel Tank 725 (5,000 gallon). Tank 725 is located between Tanks 731 and 713.

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ICF Kaiser's GPR system consists of a Geophysical Survey Systems Incorporated (GSSI) SIR-10 system. The system is digital and contains an optical disk drive. ICF Kaiser utilized a 500 MegaHertz (MHz) antenna for the survey.

**2.2 FIELD INVESTIGATION**

GPR data were obtained from at least three traverses at each pipeline survey location. The metal pipeline was first located with an electromagnetic pipeline locator. The location was then confirmed with short GPR traverses oriented perpendicular to the pipeline. The axis of the pipeline was marked on the ground surface with marking paint at 5 feet intervals along its trend. Three GPR traverses were then performed: one directly over the axis of the pipeline; and one on each side of the pipeline approximately 3 to 5 feet off of its axis. Traverses ranged from 50 to 140 feet in length. The entire GPR survey covered a total of 2,000 linear feet of GPR coverage.

Prior to performing the survey, depth calibrations were performed over a utility of known depth. Estimates of the dielectric constant were made to assess the general depth of penetration and select the optimal antenna frequency. Since the crude oil pipeline is relatively shallow (less than 3 feet) and penetration depths were adequate (3 feet and more), a 500 MHz antenna was utilized as the primary antenna for the survey. The 500 MHz antenna offers the highest resolution for the depth ranges of interest (approximately 5 feet).

**2.3 DATA ANALYSIS AND RESULTS**

The GPR records (hard copy and digital) were inspected for GPR anomalies. Petroleum pipeline leaks typically generate a localized increase in attenuation (decrease in magnitude) and possibly phase reversal within a contained area adjacent to the pipeline. Leaks may also generate anomalous reflection patterns, depending on the specific subsurface conditions. The GPR records were inspected for both features. Any anomalous areas encountered in the GPR records were referenced to the distance along the corresponding GPR traverse. Since the traverses were marked in the field, locations of any possible GPR anomalies can easily be determined.

The GPR Records obtained from the Site indicate that the subsurface materials exhibit a considerable variation of electrical properties. This is most likely due to the various materials that comprise the imported fill. Although it was probably imported locally, the excavation, mixing and physical disturbance of the material itself will create varying electrical properties.

A number of reflection patterns that are typical of utilities were also present in the GPR records. These utility-type reflectors occurred in areas where no utilities are present on the site utility map. They may be abandoned utilities or other elongated features. Cobbles and boulders may also generate reflection patterns similar to utilities. However, it is doubtful that these features exist within the fill. The local silty sandy materials do not show evidence of cobbly material.

In general, the GPR records obtained along the pipeline do not indicate any major areas where petroleum leakage may have incurred. There are no major areas where signal attenuation increases or anomalous reflection patterns occur. There is one small area where a slight

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2.0 GROUND PENETRATING RADAR SURVEY

The primary purpose of the ground penetrating radar survey (GPR) was to perform GPR traverses along the 16-inch crude oil petroleum pipeline. Any GPR anomalies may indicate areas of petroleum leakage. The pipeline was inspected with GPR in areas outside of the bermed area surrounding each tank cell from the harbor to the control station. This includes four areas: (1) from the harbor to the parking lot; (2) between tank cells 713 and 731; (3) between tank cells 708 and 713; and (4) from tank cell 708 to the control station. GPR traverses were also performed at three locations within the facility to locate a subsurface PVC water line that had to be avoided during sampling operations.

While GPR is well-suited to assess possible petroleum pipeline leakage and is the state-of-the-art approach for the objective of this study, no definite guarantees can be made regarding the results. Not only are there limitations inherent to the technique, but there are specific local subsurface conditions that complicate its use at the site. Nevertheless, ICF Kaiser's registered geophysicists performed the services in a manner consistent with the level of skill exercised by members of the profession currently employing the methodology.

2.1 GPR METHODOLOGY

GPR is a method that provides a continuous, high resolution cross-section depicting variations in the electrical properties of the shallow subsurface materials. The method is particularly sensitive to subsurface variations in the electrical conductivity and dielectric constant. Conductivity affects the investigation depth of the GPR system. Highly conductive materials, such as shallow clay or shallow ground water, limit the depth of penetration. Detection of buried objects or materials is dependent upon subsurface contrasts in dielectric constants. Sufficient contrast must exist to produce reflections on GPR records.

The system operates by continuously radiating an electromagnetic pulse into the ground from a transducer (antenna) as it is moved along a traverse. Since most of the earth's materials are transparent to electromagnetic energy, only a portion of the radar signal is reflected back to the surface from interfaces representing variations in electrical properties. The reflected signals are received by the same transducer and are printed in cross-section from a graphical recorder or stored on computer disk. The resulting records can provide information regarding: the location of buried objects and wastes; stratification; contamination; the thickness and lateral extent of fill material; and possible changes in material conditions such as saturation and subsurface chemical difference.

Each radar antenna consists of a single frequency. The higher the antenna frequency, the better the subsurface resolution. However, the higher the antenna frequency, the shallower the depth of penetration. Thus, while the lower antenna frequencies provide better penetration depths, the subsurface resolution is limited at lower frequencies.

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tank terminal is bounded by the Aransas Channel to the north, an apparently vacant portion of Harbor Island to the west, the Corpus Christi Channel to the east, and an Exxon Pipeline Company tank terminal to the south.

**1.2 SITE BACKGROUND AND HISTORY**

A portion of the following information was obtained from an Environmental Site Assessment (ESA) conducted by Geraghty and Miller (G&M) in December 1993.

The Site was purchased by Fina in 1972. It was previously owned by Redfish Bay Properties, Ltd. A review of the 1937 aerial photographs (located in the G&M ESA) indicates that ASTs were on-site in 1937. Inspection of the 1951 aerial photograph indicates the presence of 11 large tanks and several smaller tanks on the terminal property. What appears to be the bottoms of two demolished tanks are apparent in the area currently occupied by the landfarming operation. In the 1951 aerial photograph, Property Tracts 1, 2, and 3 appear to be undeveloped tidal flats with little or no vegetation.

The 1994 aerial photograph shows 13 large tanks on the terminal property. One of the tanks evident in the 1951 photo (Tank 726) and its associated berm has been removed. Three new tanks appear in the 1994 photo: Tanks 733, 734, and 735. Property Tracts 2 and 3 appear to be essentially unchanged between 1951 and 1994. Evidence of dredging activities is evident on Property Tract 1 in that large bermed areas are clearly seen on the 1994 photo. In addition, comparison of the 1951 and 1994 photos indicates that the southeastern tip of Tract 1 has experienced significant erosion at the juncture of the Lydia Ann Channel and the Aransas Channel. Both the 1951 and 1994 aerial photos are included in Appendix A.

According to the G&M report, the Texas General Land Office database of oil spill incidents indicated that two oil spills at the Site have been reported. First, on September 3, 1992, 50 barrels of oil were released to a drainage pipe in the facility tank farm, then discharged to the Aransas Tributary channel. G&M's review of the incident on the Texas General Land Office database indicated that the oil was contained and vacuumed; however, oil was trapped along 450 feet of shoreline. Second, on January 10, 1993, residual oil in the drainage pipe discussed above was released to the channel, resulting in a light sheen. Only a boom had to be deployed and no mechanical cleanup was required.

**1.1 SITE GEOLOGY**

Waiting for Text from PSI