11451 Katy Freeway, Suite 400
Houston, Texas 77079
United States
www.ghd.com

Our ref: 11215131-Poulos-21

October 25, 2022

Ms. Lauren Poulos
Remedial Project Manager
United States Environmental Protection Agency (EPA), Superfund Division (6SF-RA)
1201 Elm Street, Suite 500
Dallas, Texas 75270 2102

Southern Impoundment Supporting Deliverables
San Jacinto River Waste Pits Site
Harris County, Texas
EPA Region 6, CERCLA Docket No. 06-05-21 for Remedial Action

Dear Ms. Poulos:

GHD Services Inc. (GHD), on behalf of International Paper Company (Respondent), submits to the United States Environmental Protection Agency (EPA) this Field Sampling Plan (FSP). This FSP is being submitted with the requirement that it be updated and resubmitted, following selection of the Remedial Contractor (RC) for the Southern Impoundment Remedial Action (RA), in order to incorporate the RC's input into the FSP.

Should you have any questions or require additional information regarding this submittal, please contact GHD at (713) 734-3090.

Regards,

Charles Munce
MidCon Region Market Leader

+1 832 380-7655
charles.munce@ghd.com

CM/kdn/21

Encl: Attachment 1 - Field Sampling Plan

Copy to: Robert Appelt, EPA
Katie Delbecq, Texas Commission on Environmental Quality (TCEQ)
Brent Sasser, IPC

100028295

Attachments

Attachment 1

Field Sampling Plan

Field Sampling Plan Southern Impoundment

San Jacinto River Waste Pits Superfund Site Harris County, Texas

International Paper Company

October 25, 2022

→ The Power of Commitment

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1. Introduction

This Field Sampling Plan (FSP) was prepared by GHD Services Inc. (GHD), on behalf of International Paper Company (IPC) for the Southern Impoundment of the San Jacinto River Waste Pits Superfund Site in Harris County, Texas (Work Site). This FSP is an updated version of a FSP included as one of the supporting deliverables with respect to the Final 100% Remedial Design - Southern Impoundment (Amended April 2021) (GHD, 2021a) and revised, first as one of the supporting deliverables with respect to the Southern Impoundment revised Remedial Action Work Plan (RAWP), submitted to the EPA on November 26, 2021 (GHD, 2021b) and again on June 17, 2022 pursuant to requirements contained in the Revised RAWP This updated version of the FSP is being submitted to address the requirement that it be updated following selection of the Remedial Contractor (RC) for the Southern Impoundment RA, in order to incorporate the RC's input into the FSP. This FSP is being submitted on behalf of IPC to meet requirements contained in the August 5, 2021, Unilateral Administrative Order (UAO; EPA, 2021).

This FSP describes procedures for sampling of treated water from the wastewater treatment system, waste confirmation of impacted material, and imported backfill that will be used to fill excavations during implementation of the Southern Impoundment RA. It outlines the procedures for collection of samples consistent with the sample design. This FSP was prepared in accordance with *Sampling and Analysis Plan Guidance and Template, Version 4*, General Projects R9QA/009.1 May 2014, EPA. This version of the FSP also includes information provided by the disposal facilities approved to accept waste from the Southern Impoundment RA (Disposal Facilities and individually, a Disposal Facility) related to responsibilities under this plan. References in this FSP to the "Work Site" are to the Southern Impoundment.

1.1 Relationship to Supporting Plans

The FSP should be considered in combination with the other supporting plans that are part of this submittal and plans identified in the approved Final 100% Remedial Design Addendum (Amended June 2022) (GHD, 2022) that have been updated or approved for use as part of the Southern Impoundment RA. The Construction Quality Assurance/Quality Control Plan (CQA/QCP) describes the procedures to verify that the excavation objectives are achieved during implementation. The Site-Wide Monitoring Plan (SWMP) describes the procedures for monitoring to prevent the potential spread of dust generated during construction and monitoring of the best management practices (BMPs) with respect to stormwater. Field and analytical quality procedures are described in the Quality Assurance Project Plan (QAPP). The Transportation and Off-Site Disposal Plan (TODP) describes the procedures for on-site management and loading of excavated material to be disposed of off-site during the Southern Impoundment RA, the transportation routes for off-site shipments from the Work Site, and measures to be implemented, if needed to protect communities that may be affected by the shipments.

2. Off-Site Backfill Characterization Sampling

It is anticipated that during the Southern Impoundment RA approximately 63,200 cubic yards (cy) of imported fill from an off-site source will be used in backfilling excavations. As described in the Final 100% Remedial Design Addendum (GHD, 2022), imported fill will be combined with excavated overburden soils to backfill excavations. Prior to importing backfill to the Work Site, the material to be used as imported fill will be sampled to confirm that it does not contain constituents of potential concern (COPCs) above the EPA Regional Screening Levels (RSL) for residential soil (EPA RSL Table, May 2022) and the Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program (TRRP) Tier 1 Residential Soil protective concentration levels (PCLs; for total petroleum hydrocarbons [TPH]).

2.1 Sampling Rationale

A soil sample from each imported fill source will be collected and analyzed to confirm that the imported fill does not contain COPCs above the specified levels. Only one sample per imported fill source is required, as long as the general location of the source of material does not change or there has not been any identified change in the composition of the imported fill. Imported fill will be periodically monitored by the RC through visual inspections to confirm that no changes in composition have occurred. If the material appears to have altered or changed in physical composition via visual inspection, additional characterization samples may be required.

2.2 Sample Collection Objective

The objective of collecting source imported fill soil samples will be to ensure that the sample is representative of the material from that source as a whole. Soil samples should be composited from different locations and elevations of imported fill material from the source. Soil samples should be collected directly from the source and analyzed prior to delivery to the Southern Impoundment. SGS was selected as the analytical laboratory to support the RA. SGS is a full-service chemical analytical laboratory accredited under National Environmental Laboratory Accreditation Program (NELAP) and certified in Texas.

2.3 Sample Analyses

Each off-site imported fill soil sample is to be tested for the analytical parameters listed in Table 2.1, pursuant to EPA Test Methods for Evaluating Solid Waste: Physical/Chemical Methods (SW-846) and the other analytical methods listed in Table 2.1. Analytical test methods and Quality Assurance and Quality Control procedures (QA/QC) are outlined in the QAPP.

Table 2.1 Analytical Testing Procedures for Backfill Source Sampling

Analytical Parameters	Analytical Methods[1]
TAL[3] Metals	SW-846 6020A/7471A
Hexavalent Chromium	SW-846 7196A
Cyanide	SW-846 9010/9012
TCL[2] Volatiles	SW-846 8260B
TCL Semi-Volatiles	SW-846 8270D
TCL Pesticides	SW-846 8081B
Polychlorinated Biphenyls	SW-846 8082A
Herbicides	SW-846 8151A
Dioxins and Furans	EPA Method 1613B
Total Petroleum Hydrocarbons	TX 1005/1006[4]

Notes:
[1] EPA SW 846.
[2] TCL: Target Compound List.
[3] TAL: Target Analyte List.
[4] EPA Method 1613, Revision B. Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution High Resolution Gas Chromatography/High Resolution Mass Spectrometry (HRGC/HRMS)
[4] TCEQ Methods 1005 and 1006.

2.4 Sample Equipment and Procedures

All source sample collection activities will be performed using clean hand tools, such as a trowel or sharp shooter shovel, as access allows. It is intended that the samples would be collected in accordance with the procedures set forth below and those governing the collection and shipment of samples contained in the QAPP. Samples should be labeled, packed, and shipped as outlined below.

2.4.1 List of Equipment Needed

Source sampling equipment may include:

– Shovel
– Trowel
– Nitrile Gloves
– Buckets
– Mixing Bowl

2.4.2 Decontamination of Sampling Equipment

Source sample collection equipment that is not disposable should be decontaminated before and after sample collection at each sample location. Equipment cleaning procedures may include the following:

– Initial rinse with laboratory-grade deionized water to remove soil adhered to the equipment.
– Apply a non-phosphate laboratory-grade detergent to the equipment and scrub using an abrasion brush to thoroughly clean the sampling equipment.
– Triple rinse the equipment with laboratory-grade deionized water.
– Air-dry the rinsed equipment and wrap in clean, protective plastic, until used.

2.4.3 Sample Labeling

Labels should be secured to the sample containers and be written in indelible inks. Sample containers should be packaged and shipped on ice within an insulated ice chest to SGS for analysis following proper chain-of-custody protocol.

The sample identification procedure provided in the QAPP will be followed. Labels may contain the following information:

– Sample identification (this includes a sample number and may include a sample container number).
– Initials of sample collector(s).
– Date and time of sample collection.
– Location or source of sample collection.
– Analysis to be performed.
– Preservative utilized.

2.4.4 Sample Packing and Shipping

When possible, sample container preparation and packing for shipment should be completed in a well-organized and clean area, free of any potential for cross-contamination of the samples. Sample containers may be prepared for shipment as follows:

1. Containers will be wiped clean of all debris/water using paper towels (paper towels must be disposed of with other potentially impacted materials).

2. Ensure that the sample labelling protocol outlined above has been completed.

The following standard guidelines may be followed when packing samples for shipment:

1. The entire contents of the cooler will be sealed in a large plastic bag.
2. The trip blank and the temperature blank will be included with shipments of samples for volatiles analysis.
3. If the cooler is being shipped by a common carrier, such as Federal Express, the chain-of custody will be placed in a sealed plastic bag inside the cooler.
4. Custody seals (two, minimum) are to be placed on each cooler and covered with clear tape.
5. Cooler lids and drain holes are to be sealed with packaging tape.
6. All prior stickers/markings or any prior shipping labels are to be removed from coolers prior to shipment or sample custody release.
7. Samples should be shipped or delivered on the same day as sampling. If samples cannot be shipped or delivered on the same day, the cooler should be drained periodically, and ice replaced. Samples should arrive at SGS within hold times provided by SGS.
8. SGS should be notified as to when the samples should arrive.

3. Waste Confirmation Sampling

Waste profiles have been submitted, reviewed, and approved by the selected Disposal Facilities, Republic Services and Waste Connections. The approved profiles will be used to manage several waste streams from the Southern Impoundment RA, including potentially impacted soil, debris and vegetation. The Disposal Facilities have approved sampling procedures to confirm that impacted material is consistent with the approved waste profiles. A sampling grid has been established, as shown on Figures 1-3, that divides the areas to be excavated into 26 individual waste confirmation grid areas. Each individual grid area contains between 1,100 cy and 3,000 cy of impacted material to be removed.

3.1 Sample Type, Location, and Frequency

In advance of shipping material to one of the Disposal Facilities, waste confirmation samples will be collected from borings at the locations shown on Figures 1-3. Three borings will be collected within each grid area. A sample from each boring will be obtained that represents the entire vertical profile of impacted material that will be removed for disposal. The three samples will then be homogenized into a single composite sample for each of the 26 grid areas. Table 3.1 below shows location and sample depths for each sample within the 26 grid areas.

Table 3.1 Waste Confirmation Sample Locations and Depths

Grid Area	Points	x	y	Sample Depth (feet)
1	A	3216173.42	13856946.42	6-10
	B	3216232.69	13856951.04	6-10
	C	3216258.24	13856913.44	6-10
2	A	3216190.76	13856862.27	3.5-6.5
	B	3216250.12	13856869.66	6-10
	C	3216238.53	13856829.11	4-8
3	A	3215757.46	13856569.27	6-10
	B	3215800.93	13856590.98	0-8

Grid Area	Points	x	y	Sample Depth (feet)
	C	3215813.54	13856537.90	0-8
4	A	3215863.57	13856547.45	0-8
	B	3215854.66	13856487.62	6-10
	C	3215907.94	13856504.95	6-10
5	A	3215917.15	13856459.03	6-10
	B	3215957.75	13856498.35	0-10
	C	3216006.01	13856444.07	5.5-10
6	A	3215724.81	13856511.72	6-8
	B	3215747.14	13856465.22	5.5-10
	C	3215779.90	13856494.98	6-8
7	A	3215788.27	13856399.30	6-10
	B	3215841.06	13856441.15	0-10
	C	3215859.72	13856389.64	6-10
8	A	3215909.20	13856401.28	8-10
	B	3215965.22	13856374.66	0-10
	C	3215920.89	13856334.96	0-10
9	A	3215661.60	13856422.90	0-10
	B	3215713.16	13856409.46	0-10
	C	3215736.32	13856374.73	0-10
10	A	3215849.58	13856341.37	6-10
	B	3215869.34	13856292.55	8-10
	C	3215929.53	13856282.42	0-10
11	A	3215655.63	13856366.89	0-10
	B	3215718.03	13856350.20	0-10
	C	3215731.37	13856309.96	0-10
12	A	3215607.03	13856312.25	2-10
	B	3215660.02	13856320.88	2-10
	C	3215648.46	13856254.38	2-10
13	A	3215584.18	13856258.62	3.5-10
	B	3215537.59	13856216.94	3.5-8.5
	C	3215597.70	13856195.91	4-10
14	A	3215685.77	13856246.84	1.5-6.5
	B	3215680.50	13856177.22	4-8
	C	3215618.83	13856161.72	4-10
15	A	3215555.56	13856158.84	0-10
	B	3215511.02	13856123.39	2-8
	C	3215573.23	13856107.62	3.5-10
16	A	3215461.53	13856076.08	2-8

Grid Area	Points	x	y	Sample Depth (feet)
	B	3215508.61	13856037.40	3.5-8.5
	C	3215534.69	13856085.09	3.5-8.5
17	A	3215446.91	13855997.97	2-8
	B	3215443.52	13855947.56	2-8
	C	3215403.25	13855926.50	2-8
18	A	3215265.78	13855906.44	2-8
	B	3215220.88	13855879.14	2-10
	C	3215261.70	13855840.22	2-8
19	A	3215255.98	13855958.18	2-8
	B	3215329.13	13855916.72	0-8
	C	3215329.13	13855862.45	0-8
20	A	3215372.61	13855893.82	0-8
	B	3215411.36	13855891.61	2-8
	C	3215466.45	13855903.50	0-8
21	A	3215334.96	13855804.44	0-6
	B	3215326.69	13855741.71	1.5-6.5
	C	3215365.15	13855698.84	1.5-6.5
22	A	3215420.58	13855842.37	0-8
	B	3215387.76	13855791.23	0-10
	C	3215444.16	13855791.23	0-10
23	A	3215392.99	13855744.27	0-6
	B	3215459.76	13855752.59	0-6
	C	3215427.74	13855691.71	2-6
24	A	3215583.02	13855835.68	2-8
	B	3215524.79	13855798.40	2-8
	C	3215596.96	13855759.99	2-8
25	A	3215545.34	13855752.29	2-8
	B	3215497.01	13855715.39	2-8
	C	3215550.29	13855677.74	2-8
26	A	3215485.60	13855653.77	2-6
	B	3215428.52	13855619.54	2-6
	C	3215483.69	13855608.13	2-6

3.2 Sample Analyses

The 26 composite samples will be analyzed for TPH and selected constituents included in Title 30 of the TAC Chapter 335, Subchapter R (Waste Classification) Appendix 1, Table 1 for Class 1 Non-Hazardous Industrial Waste (see Table 3.2 below) using the following methods:

a. Toxicity Characteristic Leaching Procedure (TCLP)/Dioxins and Furans – EPA SW-846 Method 1311 / EPA Method 1613B.
b. TCLP Metals – EPA SW-846 Methods 1311/6010C.
c. TCLP Mercury – EPA SW-846 Methods 1311 / 7470A.
d. TPH – TNRCC Method 1005.

The analytical data from a grid area will be provided to the selected Disposal Facility approximately 14 calendar days prior to shipping material from that grid area for disposal. The analytical data will be accompanied by a table comparing the results to the constituents and limits listed below.

The approved Non-Hazardous Class 2 Waste Profile will apply to the material within any grid area where sample results provided to the Disposal Facility are below the limits in Table 3.2. If the result from a grid area exceeds any of the limits listed in Table 3.2, material from that grid area will not be shipped to the Disposal Facility until that material has been further characterized, and if necessary, a newly created Non-Hazardous Industrial Class 1 waste profile for the material from that grid area has been approved by the Disposal Facility.

Table 3.2 Waste Confirmation Analyte List

Analyte	Units	Class I/Class II Limit (Based on TCLP analysis)
TCLP-Dioxins/Furans		
2,3,7,8-TCDD	mg/L	0.005
1,2,3,7,8-PeCDD	mg/L	0.01
1,2,3,4,7,8-HxCDD	mg/L	0.05
1,2,3,6,7,8-HxCDD	mg/L	0.05
1,2,3,7,8,9-HxCDD	mg/L	0.05
2,3,7,8-TCDF	mg/L	0.05
1,2,3,7,8-PeCDF	mg/L	0.10
2,3,4,7,8-PeCDF	mg/L	0.01
1,2,3,4,7,8-HxCDF	mg/L	0.05
1,2,3,6,7,8-HxCDF	mg/L	0.05
1,2,3,7,8,9-HxCDF	mg/L	0.05
TCLP-Metals		
Antimony	mg/L	1
Arsenic	mg/L	1.8
Barium	mg/L	100
Beryllium	mg/L	0.08
Cadmium	mg/L	0.5
Chromium	mg/L	5
Lead	mg/L	1.5
Mercury	mg/L	0.2
Nickel	mg/L	70
Selenium	mg/L	1
Silver	mg/L	5

Analyte	Units	Class I/Class II Limit (Based on TCLP analysis)
Total Petroleum Hydrocarbons		Class I/Class II Limit (Based on total analysis)
TPH	mg/kg	1,500
Notes: mg/L - milligrams per liter mg/kg - milligrams per kilogram		

3.3 Sample Equipment and Procedures

3.3.1 List of Equipment Needed

Waste confirmation sampling equipment may include:

– Sample containers.
– Bucket and stirrer.
– Gloves.
– Waterproof ink pen.
– Notebook.

3.3.2 Sampling Procedure

The following procedures are to be followed when collecting waste confirmation samples:

– Obtain sample cooler, bottles, and container from SGS.
– Inspect sample containers for cleanliness, integrity, and the presence and suitability of any required preservatives.
– The waste confirmation soil borings will be installed using direct-push drilling methodology. Three borings are planned within each grid area. A sample from each boring will be obtained that represents the entire vertical profile of impacted material that will be removed for disposal. The three samples will then be homogenized into a single composite sample for each of the 26 grid areas.
– If possible, sufficient equipment will be sent to the field so that all sampling can be conducted without the need for field decontamination. Decontamination of field equipment should be conducted as specified in the QAPP. Sample collectors should change gloves after each sampling event.
– Label sample bottles clearly, using a thin tip permanent marker pen. The sample identification procedure provided in the QAPP will be followed. The label may include:
    - Sample identification number
    - Initials of sample collector(s).
    - Date and time of sample collection.
    - Location or source of sample collection.
    - Analysis to be performed.
    - Preservative utilized.
– Cross-check labels to ensure that labels and field sheet IDs match.
– Place samples on ice, immediately.
– Seal samples in separate bubble wrap and plastic bags with proper labeling on each sample.
– Cover samples with ice to keep cool during shipping.

– Place all sealed bags containing the samples inside a large contractor bag inside the cooler.
– Complete chain-of-custody documentation. Place a chain-of-custody form in a separate plastic bag placed on top of the samples for shipment. Keep a copy for reference. If a copy is not available, take photograph of the form as a record.
– Samples should be shipped or delivered on the same day as sampling. If samples cannot be shipped or delivered on the same day, cooler must be drained periodically, and ice replaced. Samples must arrive at SGS within the hold times provided by SGS.

Notify SGS when the samples should arrive. The Disposal Facilities (Republic Services and Waste Connections) have approved these confirmation sampling procedures as representative and appropriate for r use in acceptance of the material from the Work Site under the approved waste profiles. Additional details regarding off-site disposal of waste excavated at the Work Site is provided in the TODP.

4. Water Sampling

During the Southern Impoundment RA, water that accumulates in an open excavation (through seepage or precipitation) will be treated through an on-site water treatment system (WTS). Treated contact water will be stored in three (3) Effluent Tanks for batch discharge to the San Jacinto River, only after monitoring results confirm that the discharge is in compliance with discharge criteria. The water treatment process, the results of treatability testing, and the calculated discharge criteria are detailed in the 100% RD Addendum.

4.1 Sample Collection Objective

The WTS has been designed to remove suspended solids and COPCs associated with those solids, including dioxins/furans and metals. Sampling is required for purposes of compliance with discharge criteria for total suspended solids (TSS), pH, dioxins/furans, and metals.

4.2 Sample Type, Location, and Frequency of Compliance Sampling

The compliance sampling location with respect to the WTS is identified on Drawing P-04 (included as Appendix A). The location is downstream of the last treatment unit but before the effluent tanks as identified on Drawing P-04. The below Table 4.1 presents a summary of the analysis type and minimum frequency of sampling. Effluent samples will be collected from the compliance sampling point and analyzed prior to discharge in compliance with Table 4.1 Sample and Analysis Frequency and 30 TAC 319.9.

Table 4.1 Sample Analysis and Frequency

Parameter	Minimum Frequency of Measurement	Standard Analytical TAT (business days) (1)	Sample Type
Flow	Daily	---	Instantaneous
pH	Once per week	---	Grab
TSS	Twice per week	3-5 days	Composite
Metals	Once per week	3-5 days	Composite
Dioxin/Furans	Once per week	3-5 days	Composite

(1) Flow rate and pH data will be collected on-site using real-time in-line monitors.

(2) The design drawings detail one influent and three effluent 688,000-gallon tanks. However, the RC could consider increasing the tank sizing as long as properly sized secondary containment and controls are in place.

If analyses at the specified compliance monitoring point indicate that effluent has not met discharge criteria for a regulated parameter, effluent will be held in the Effluent Tanks and returned to the Influent Tank to be re-treated. Additionally, performance checks may be conducted on the treatment system, including but not limited to, appropriate modifications with respect to chemical dose, checking to determine whether GAC and/or filter media and bag filters should be replaced, etc. The EPA will be notified if an Effluent Tank batch does not meet discharge requirements and must be circulated back through the WTS. The notification will also include any additional information concerning performance checks or changes that were performed as well as the result(s) for the effluent batch that did not meet the discharge criteria.

4.3 Sample Equipment and Procedures

4.3.1 List of Equipment Needed

Water sampling equipment may include:

– Sample containers.
– Bucket and stirrer (if collecting multiple samples at same location).
– Gloves.
– Waterproof ink pen.
– Notebook.
– pH meter and calibration standards.

4.3.2 Equipment Calibration

The pH meter should be calibrated using a portable meter following instrument manufacturer instructions. A two-point calibration should be conducted at a minimum. Records of pH meter calibration should be maintained at the Work Site during the Southern Impoundment RA, as specified in the QAPP.

4.3.3 Sampling Procedure

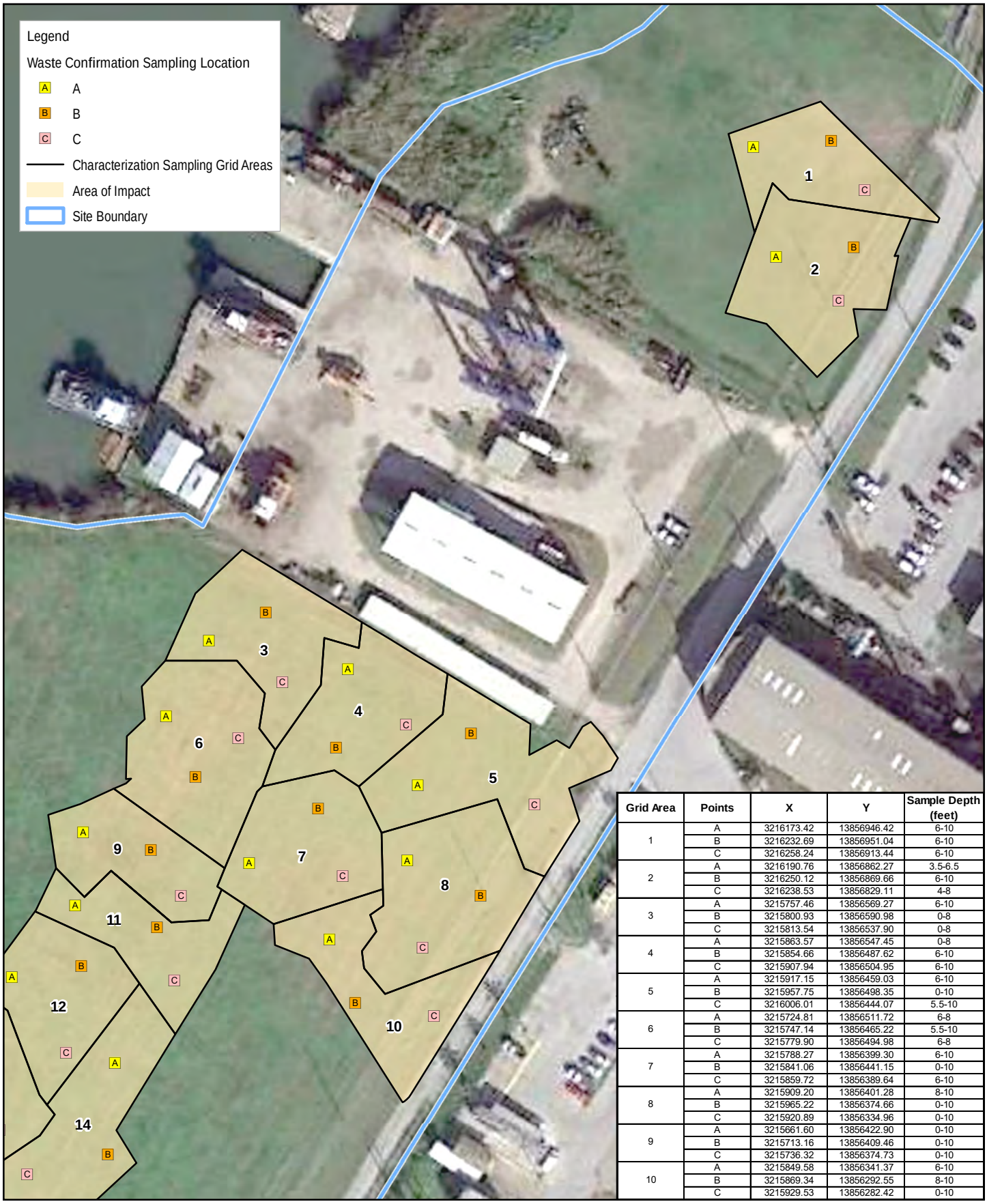
It is recommended that the following procedure be followed when collecting water samples:

– Obtain sample cooler, bottles, and container from SGS.
– Inspect sample containers for cleanliness, integrity, and the presence and suitability of any required preservatives.
– Flush line at sample port to clear water standing in line in order to obtain a representative sample. Containerize the flush water and return to treatment system.
– Collect fresh grab samples in a clean bucket. If possible, samples will be collected directly into sample containers. Volume should be sufficient to fill all bottles. Stir bucket, if used, to suspend solids. Divide each sample between containers, such that essentially identical samples are collected and submitted to SGS for each sample location during each sampling event.
– Collect composite samples for a 24-hour period or over the length of the discharge period to the Effluent Tank (if the discharge occurs for less than 24 hours). A composite sampler may be used to a collect flow-weighted composite sample. Alternatively, a series of grab samples may be composited in volumes proportional to flow and collected at the intervals required by 30 TAC 319.9.
– If possible, sufficient equipment will be sent to the field so that all sampling can be conducted without the need for field decontamination. Decontamination of field equipment should be conducted as specified in the QAPP. Sample collectors should change gloves after each sampling event.
– Label sample bottles clearly, using a thin tip permanent marker pen. The sample identification procedure provided in the QAPP will be followed. The label may include:

    - Sample identification number
    - Initials of sample collector(s).
    - Date and time of sample collection.
    - Location or source of sample collection.
    - Analysis to be performed.
    - Preservative utilized.
- Cross-check labels to ensure that labels and field sheet IDs match.
- Place samples on ice, immediately.
- Seal samples in separate bubble wrap and plastic bags with proper labeling on each sample.
- Cover samples with ice to keep cool during shipping.
- Place all sealed bags containing the samples inside a large contractor bag inside the cooler.
- Complete chain-of-custody documentation. Place a chain-of-custody form in a separate plastic bag placed on top of the samples for shipment. Keep a copy for reference. If a copy is not available, take photograph of the form as a record.
- Samples should be shipped or delivered on the same day as sampling. If samples cannot be shipped or delivered on the same day, cooler must be drained periodically, and ice replaced. Samples must arrive at SGS within the hold times provided by SGS.
- Notify SGS when the samples should arrive.

5. References

- GHD, 2021a. *Final 100% Remedial Design-Southern Impoundment (Amended April 2021)*, San Jacinto River Waste Pits Superfund Site. Prepared for International Paper Company and U.S. Environmental Protection Agency, Region 6. April 19, 2021.
- GHD, 2021b. *Remedial Action Work Plan - Southern Impoundment Revision 2*, San Jacinto River Waste Pits Superfund Site. Prepared for International Paper Company and U.S. Environmental Protection Agency, Region 6. November 26, 2021.
- EPA, 2021. Unilateral Administrative Order for the Remedial Action of the Southern Impoundment. U.S. EPA Region 6, CERCLA Docket No. 06-05-21. In the matter of: San Jacinto River Waste Pits Superfund Site, Harris County, Texas, Respondent. August 2021.
- GHD, 2022. *100% Remedial Design Addendum*, San Jacinto River Waste Pits Superfund Site. Prepared for International Paper Company and U.S. Environmental Protection Agency, Region 6. June 2, 2022.



Grid Area	Points	X	Y	Sample Depth (feet)
1	A	3216173.42	13856946.42	6-10
	B	3216232.69	13856951.04	6-10
	C	3216258.24	13856913.44	6-10
2	A	3216190.76	13856862.27	3.5-6.5
	B	3216250.12	13856869.66	6-10
	C	3216238.53	13856829.11	4-8
3	A	3215757.46	13856569.27	6-10
	B	3215800.93	13856590.98	0-8
	C	3215813.54	13856537.90	0-8
4	A	3215863.57	13856547.45	0-8
	B	3215854.66	13856487.62	6-10
	C	3215907.94	13856504.95	6-10
5	A	3215917.15	13856459.03	6-10
	B	3215957.75	13856498.35	0-10
	C	3216006.01	13856444.07	5.5-10
6	A	3215724.81	13856511.72	6-8
	B	3215747.14	13856465.22	5.5-10
	C	3215779.90	13856494.98	6-8
7	A	3215788.27	13856399.30	6-10
	B	3215841.06	13856441.15	0-10
	C	3215859.72	13856389.64	6-10
8	A	3215909.20	13856401.28	8-10
	B	3215965.22	13856374.66	0-10
	C	3215920.89	13856334.96	0-10
9	A	3215661.60	13856422.90	0-10
	B	3215713.16	13856409.46	0-10
	C	3215736.32	13856374.73	0-10
10	A	3215849.58	13856341.37	6-10
	B	3215869.34	13856292.55	8-10
	C	3215929.53	13856282.42	0-10

Paper Size ANSI A

0 25 50 75 100

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane Texas South Central FIPS 4204 Feet

N

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SAN JACINTO RIVER WASTE PITS
HARRIS COUNTY, TEXAS
SOUTHERN IMPOUNDMENT

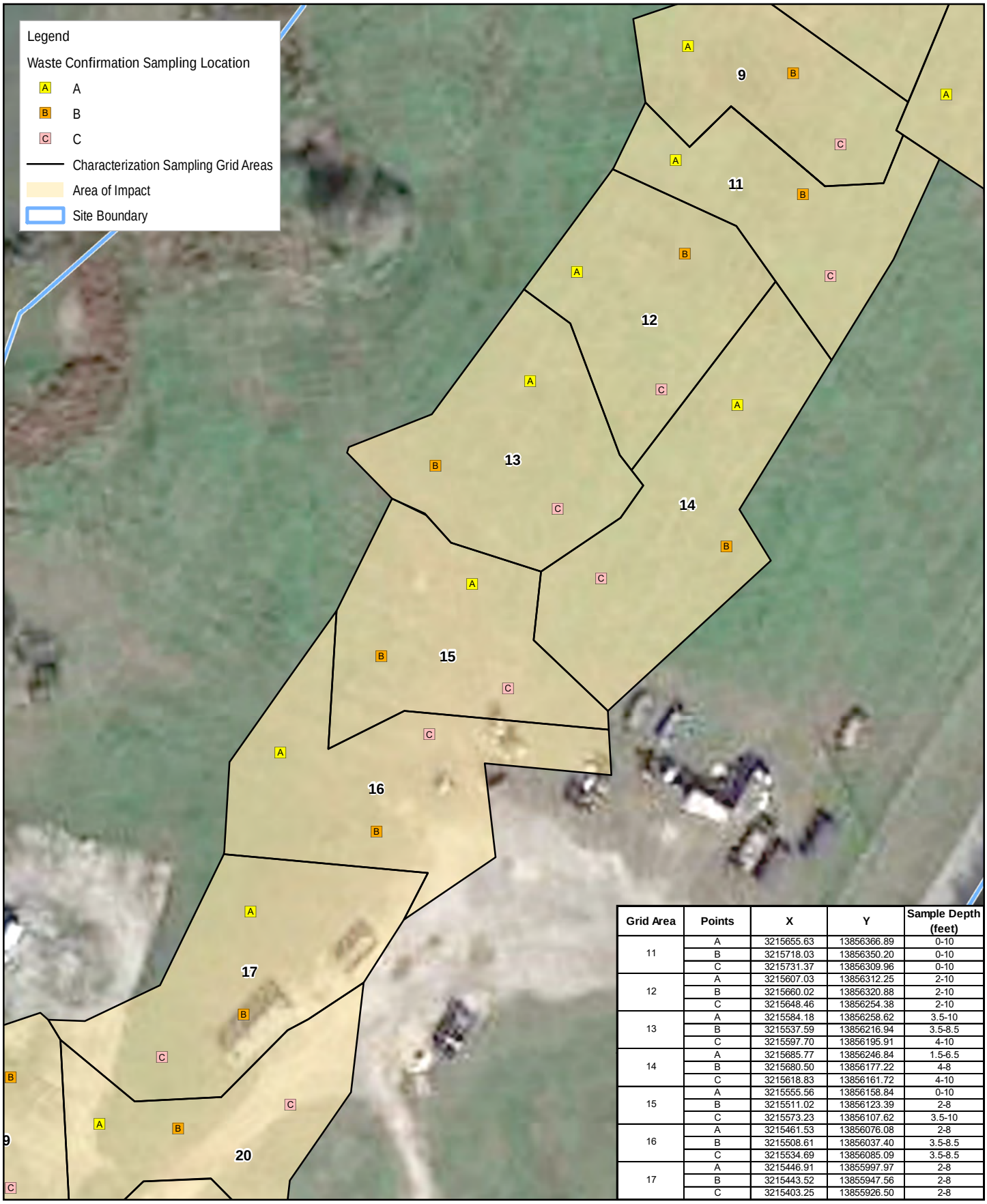
WASTE CONFIRMATION SAMPLING LOCATIONS (GRIDS 1-10)

Project No. 11215131
Date Oct 21, 2022

FIGURE 1

Q:\GIS\PROJECTS\11215000s\11215131\LTR-Floyd-2\11215131_202210_LTR-Floyd-2_GIS001.mxd

Data source: Google Earth Basemap, Imagery Date 11/16/2020



Grid Area	Points	X	Y	Sample Depth (feet)
11	A	3215655.63	13856366.89	0-10
	B	3215718.03	13856350.20	0-10
	C	3215731.37	13856309.96	0-10
12	A	3215607.03	13856312.25	2-10
	B	3215660.02	13856320.88	2-10
	C	3215648.46	13856254.38	2-10
13	A	3215584.18	13856258.62	3.5-10
	B	3215537.59	13856216.94	3.5-8.5
	C	3215597.70	13856195.91	4-10
14	A	3215685.77	13856246.84	1.5-6.5
	B	3215680.50	13856177.22	4-8
	C	3215618.83	13856161.72	4-10
15	A	3215555.56	13856158.84	0-10
	B	3215511.02	13856123.39	2-8
	C	3215573.23	13856107.62	3.5-10
16	A	3215461.53	13856076.08	2-8
	B	3215508.61	13856037.40	3.5-8.5
	C	3215534.69	13856085.09	3.5-8.5
17	A	3215446.91	13855997.97	2-8
	B	3215443.52	13855947.56	2-8
	C	3215403.25	13855926.50	2-8

Paper Size ANSI A

0 15 30 45 60

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane Texas South Central FIPS 4204 Feet

N

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SAN JACINTO RIVER WASTE PITS
HARRIS COUNTY, TEXAS
SOUTHERN IMPOUNDMENT

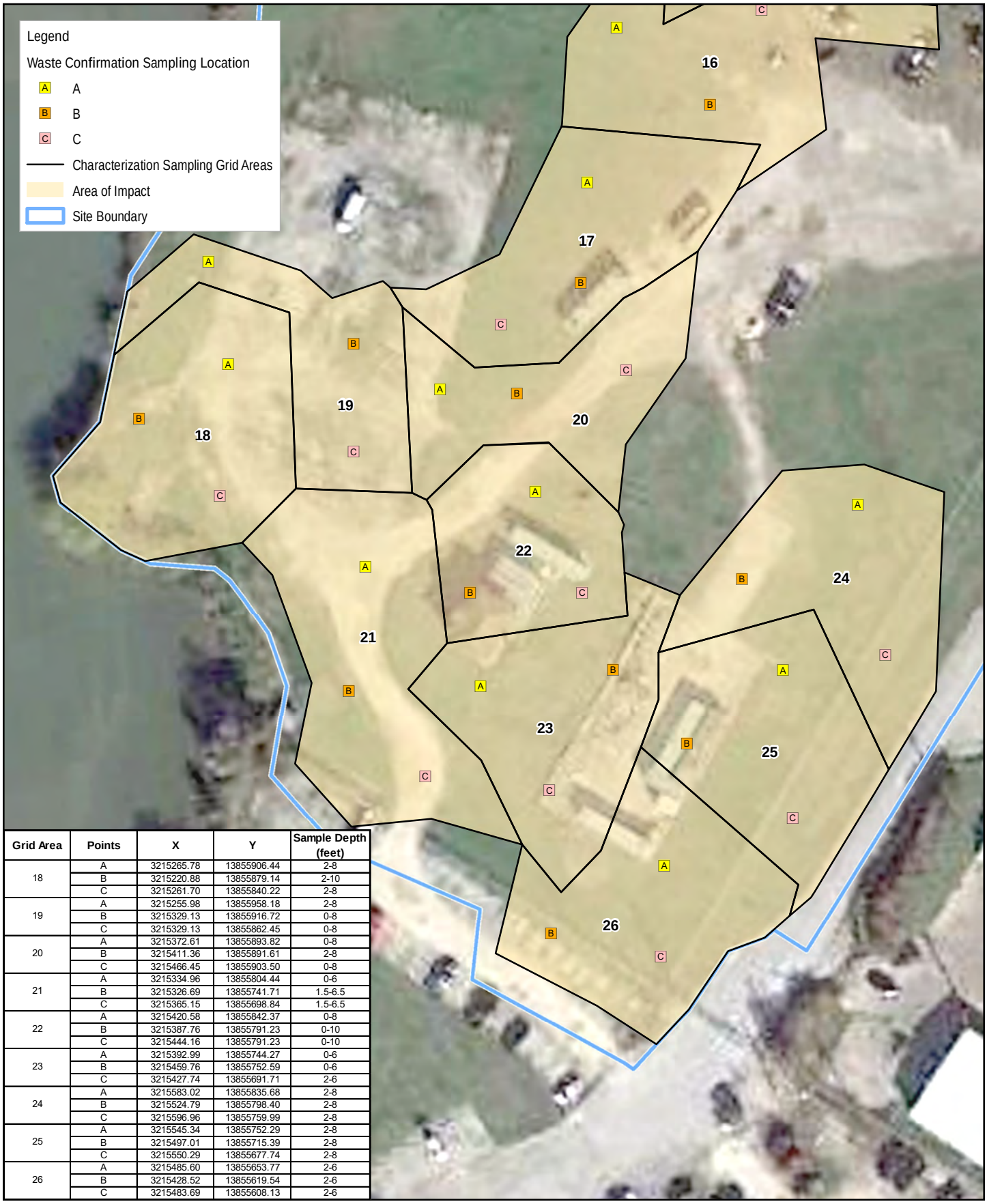
WASTE CONFIRMATION SAMPLING LOCATIONS (GRIDS 11-17)

Project No. 11215131
Date Oct 21, 2022

FIGURE 2

Q:\GIS\PROJECTS\11215000s\11215131\LTR-Floyd-2\11215131_202210_LTR-Floyd-2_GIS002.mxd

Data source: Google Earth Basemap, Imagery Date 11/16/2020



Grid Area	Points	X	Y	Sample Depth (feet)
18	A	3215265.78	13855906.44	2-8
	B	3215220.88	13855879.14	2-10
	C	3215261.70	13855840.22	2-8
19	A	3215255.98	13855958.18	2-8
	B	3215329.13	13855916.72	0-8
	C	3215329.13	13855862.45	0-8
20	A	3215372.61	13855893.82	0-8
	B	3215411.36	13855891.61	2-8
	C	3215466.45	13855903.50	0-8
21	A	3215334.96	13855804.44	0-6
	B	3215326.69	13855741.71	1.5-6.5
	C	3215365.15	13855698.84	1.5-6.5
22	A	3215420.58	13855842.37	0-8
	B	3215387.76	13855791.23	0-10
	C	3215444.16	13855791.23	0-10
23	A	3215392.99	13855744.27	0-6
	B	3215459.76	13855752.59	0-6
	C	3215427.74	13855691.71	2-6
24	A	3215583.02	13855835.68	2-8
	B	3215524.79	13855798.40	2-8
	C	3215596.96	13855759.99	2-8
25	A	3215545.34	13855752.29	2-8
	B	3215497.01	13855715.39	2-8
	C	3215550.29	13855677.74	2-8
26	A	3215485.60	13855653.77	2-6
	B	3215428.52	13855619.54	2-6
	C	3215483.69	13855608.13	2-6

Paper Size ANSI A

0 15 30 45 60

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane Texas South Central FIPS 4204 Feet

N

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SAN JACINTO RIVER WASTE PITS
HARRIS COUNTY, TEXAS
SOUTHERN IMPOUNDMENT

WASTE CONFIRMATION SAMPLING LOCATIONS (GRIDS 18-26)

Project No. 11215131
Date Oct 21, 2022

FIGURE 3

Q:\GIS\PROJECTS\11215000s\11215131\LTR-Floyd-2\11215131_202210_LTR-Floyd-2_GIS003.mxd

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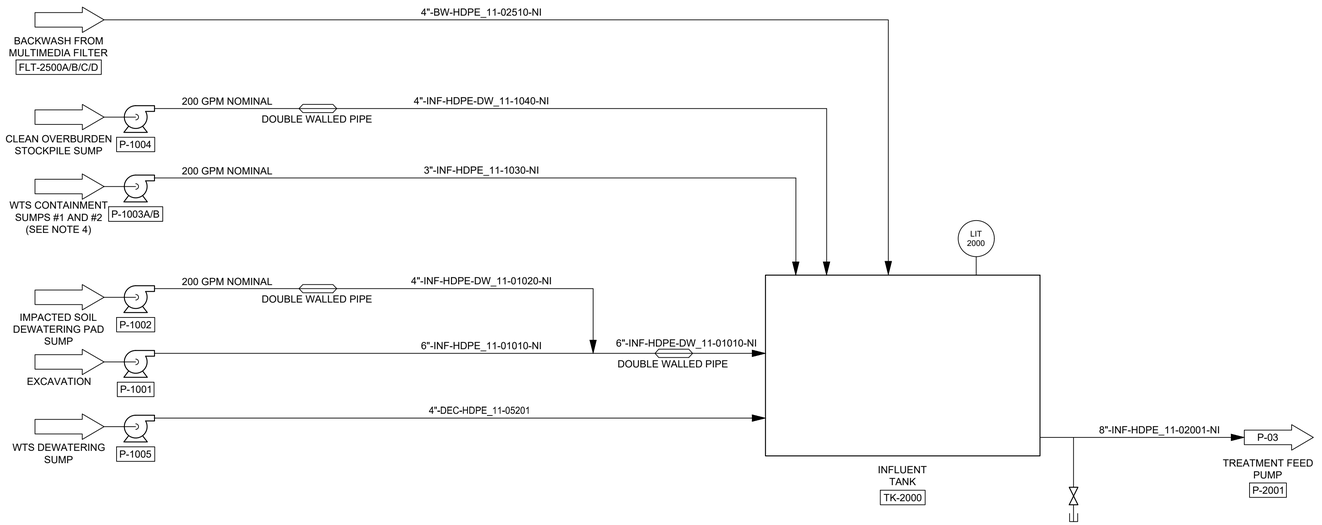
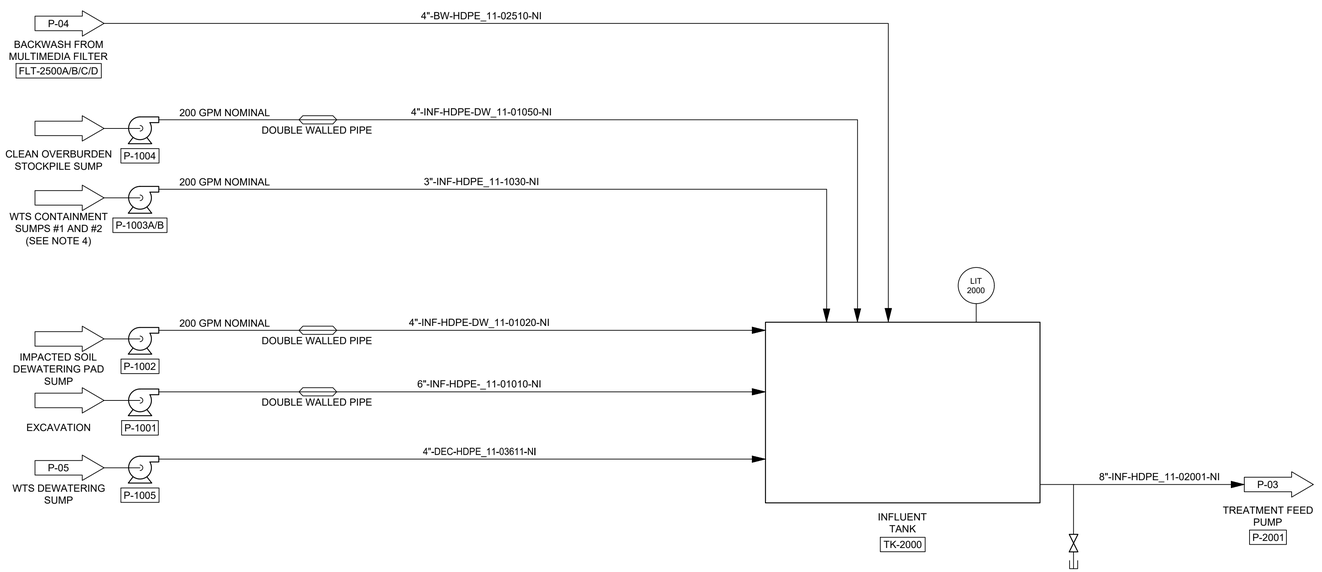
Appendices

Appendix A

Water Treatment System P&ID



1 **WTS INFLUENT SOURCES - SEASON 1 - PART 1**
NONE



1 **WTS INFLUENT SOURCES - SEASON 1 - PART 2 & SEASON 2**
NONE

NOTES:
1. FOR CLARITY NOT ALL SYSTEM ELEMENTS (E.G. VALVES, PIPE SIZES) HAVE BEEN SHOWN. P&IDs ARE CONCEPTUAL ONLY AND ARE TO BE FINALIZED BY CONTRACTOR.
2. THE TREATMENT SYSTEM DESIGNS ARE PRELIMINARY AND SUBJECT TO CHANGE.
3. CONTRACTOR SHALL PROVIDE PROVISIONS TO DIRECT EQUIPMENT DECONTAMINATION WATER TO WATER TREATMENT SYSTEM OR TO AN ADJACENT CONTAINMENT AREA WITH PUMPING SYSTEM.
4. CONTRACTOR PROVIDE AN ADEQUATE NUMBER OF SUMPS AND PUMPS TO DEWATER CONTAINMENT AREA AFTER A LARGE RAIN EVENT TO RESUME ACTIVITIES.

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Project
REMEDIAL DESIGN SOUTHERN IMPOUNDMENT HARRIS COUNTY, TEXAS

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9	100% RD ADDENDUM	MW	RH	06/02/2022
8	FOR CLIENT REVIEW	RS	NF	05/06/2022
7	100% EPA RE-SUBMITTAL	MW	NF	04/19/2021
6	100% EPA SUBMITTAL	MW	NF	12/18/2020

Drawn	BP	Designer	KJ
Drafting Check	MW	Design Check	NF
Project Coordinator	CM	Date	May 27, 2022
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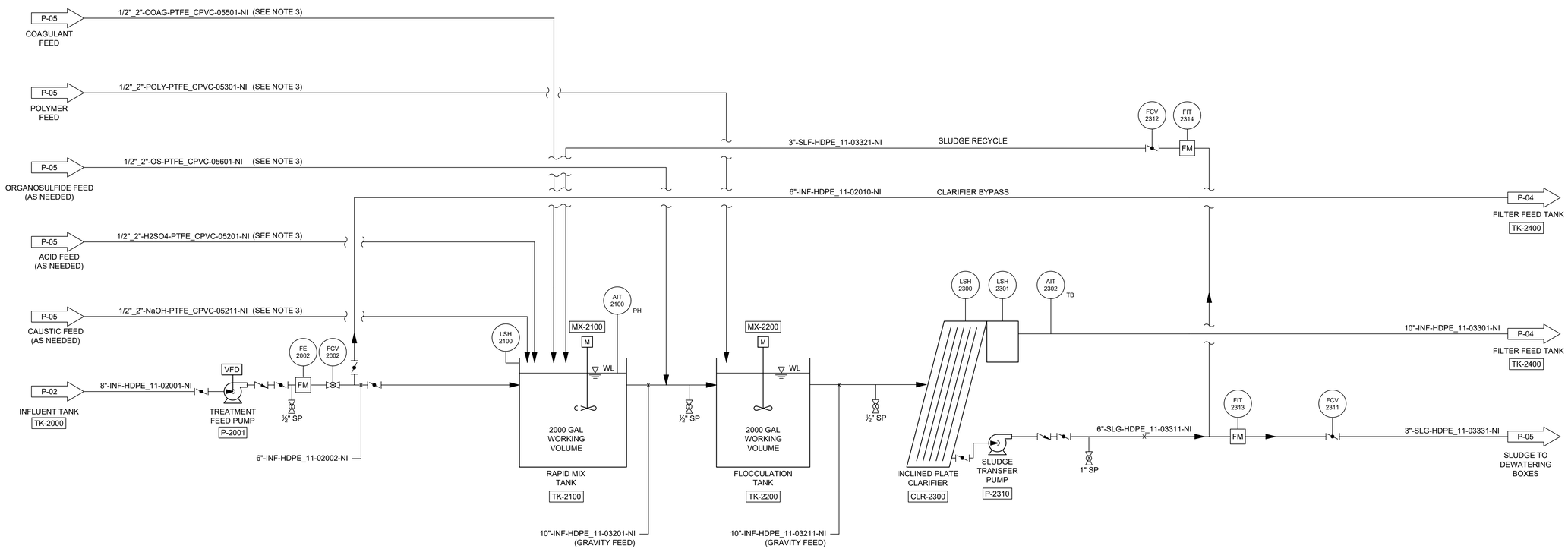
Title
WATER TREATMENT SYSTEM P&ID (1 OF 4)

Sheet No.
P-02

Plot Date: 27 May 2022 - 3:20 PM Plotted By: Matt Wolfer Filename: N:\US\Baton Rouge\Projects\562\11215131\Digital_Design\ACAD 2019\Sheets\11215131-01-DWG-P-002.dwg



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2. THE TREATMENT SYSTEM DESIGNS ARE PRELIMINARY AND SUBJECT TO CHANGE.
3. ALL CHEMICAL TUBING SHALL BE INSIDE 2" CPVC CONTAINMENT PIPE.

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7	100% EPA RE-SUBMITTAL	MW	NF	04/19/2021
6	100% EPA SUBMITTAL	MW	NF	12/18/2020

Drawn	BP	Designer	KJ
Drafting Check	MW	Design Check	NF
Project Coordinator	CM	Date	May 27, 2022
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WATER TREATMENT SYSTEM P&ID (2 OF 4)

Sheet No.
P-03

Sheet **40** of **46**

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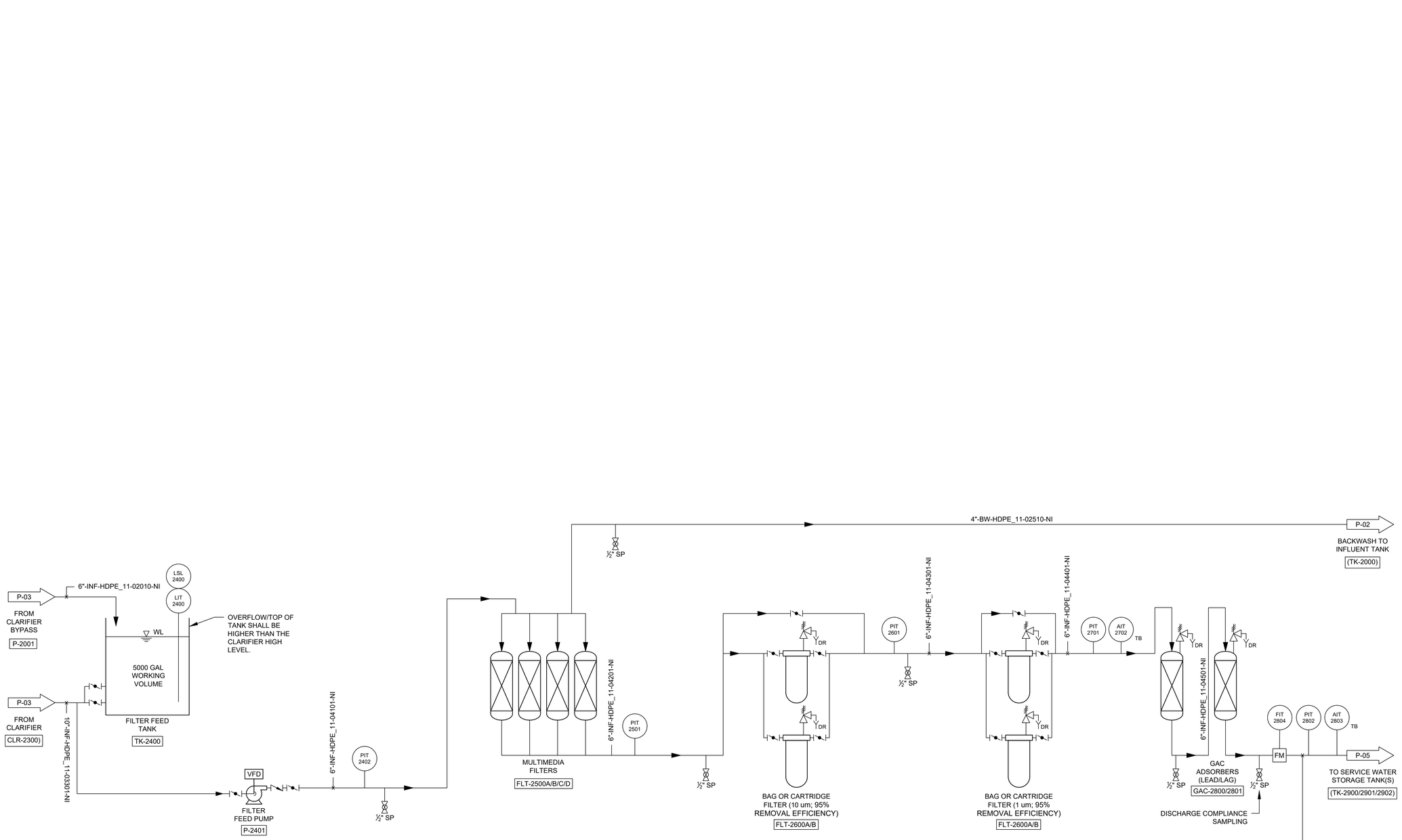

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REMEDIAL DESIGN SOUTHERN IMPOUNDMENT HARRIS COUNTY, TEXAS

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7	100% EPA RE-SUBMITTAL	MW	NF	04/19/2021
6	100% EPA SUBMITTAL	MW	NF	12/18/2020

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Drafting Check **MW** | Design Check **NF**
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Title
WATER TREATMENT SYSTEM P&ID (3 OF 4)

Sheet No.
P-04

Sheet **41** of **46**

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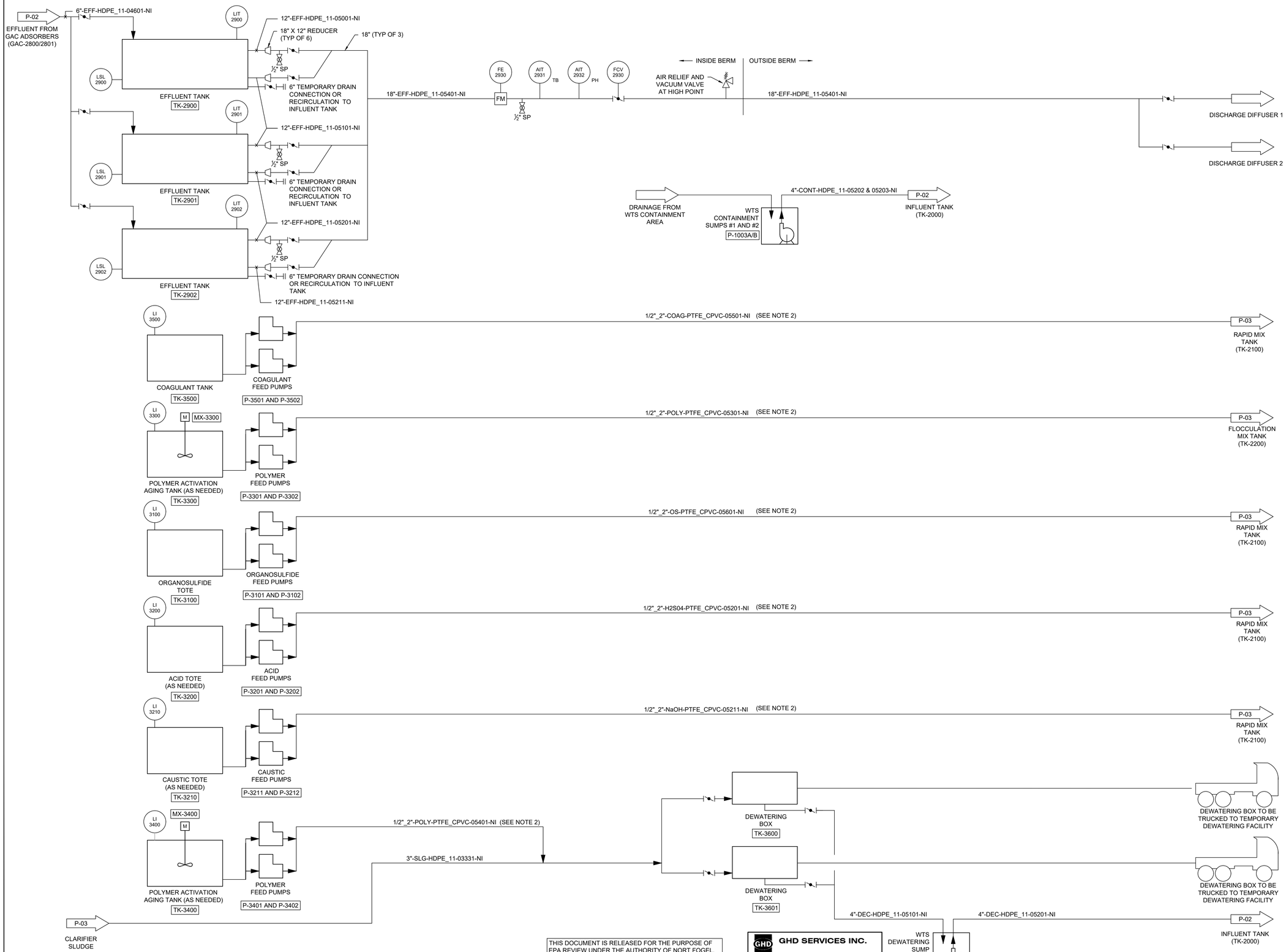

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6	100% EPA SUBMITTAL	MW	NF	12/18/2020

Drawn BP	Designer KJ
Drafting Check MW	Design Check NF
Project Coordinator CM	Date May 27, 2022
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Project No. 11215131

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WATER TREATMENT SYSTEM P&ID (4 OF 4)

Sheet No.
P-05

Sheet 42 of 46