

8/8/18

Weather: Sunny, 65-88 F

0815 Setup on 19C-LGIA-MW07

19C-LGIA-MW07

See purge/sample sheet for details

0945 Sampled 19C-LGIA-MW07 for VOCs, Metals, Explosives, & PAHs

1050 Setup on 19C-G0036

19C-G0036

See purge/sample sheet for details

1155 Sampled 19C-G0036 for Total & Dissolved metals

1210 Setup on 20B-UGIA-MW10

20B-UGIA-MW10

See purge/sample sheet for details

12:50 Sampled 20B-UGIA-MW10 for RDX (Explosives)

13:10 Setup on 20B-UGIA-MW11

20B-UGIA-MW11

See purge/sample sheet for details

13:50 Sampled 20B-UGIA-MW11 for RDX (Explosives)

14:20 Setup on 20B-UGIA-MW09

20B-UGIA-MW09

See purge/sample sheet for details

15:05 Sample 20B-UGIA-MW09 for RDX

16:30 Shift off site

8/8/18
JLC

8/9/18

Weather: Sunny, 65-85F

09:00 Setup on 21B-BPA-LGIA-MW10

21B-BPA-LGIA-MW10 - Total Depth = 46.78

See Sampling/Purge Data Sheet for details

10:00 Sampled 21B-BPA-LGIA-MW10 for Naphthalene

10:30 Setup on 20B-G0064

20B-G0064 Total Depth = 23.03 ft

See Purge/Sample Data Sheet for details

11:30 Sampled 20B-G0064 for RDX

12:15 Setup on 21B-BB-LGIA-MW04

21B-BB-LGIA-MW04 Total Depth = 45.92

See Purge/Sample Data Sheet for details

13:10 Sampled 21B-BB-LGIA-MW04 for Metals

13:15 Setup on 21B-BB-UGIA-MW03

21B-BB-UGIA-MW03

See Purge/Sample Data Sheet for Details

14:15 Sampled 21B-BB-UGIA-MW03

15:00 Setup on 21B-BPA-LGIA-MW10 to collect RDX sample.

Team decides to not analyze RDX at BPA-MW10.

13:30 Offsite.

8/9/18
JBL

8/10/18

Weather: Sunny 65-85 F

0830 Setup on 21B-BPA-VGIA-MW12

21B-BPA-VGIA-MW12 Total Depth: 22.76

See Sampling Data Sheet for details.

~~0930~~ ~~1030~~ ⁰⁹³⁰ Sampled 21B-BPA-VGIA-MW12 for Freon-113 and RDX

~~1040~~ ⁰⁹⁴⁵ Setup on 21B-DS-LGIA-MW09

21B-DS-LGIA-MW09 Total Depth: 45.83

See Sampling Data Sheet for details.

1030 Sampled 21B-DS-LGIA-MW09 for Freon-113

1040 Setup on 21B-DS-VGIA-MW08

21B-DS-VGIA-MW08 Total Depth: 22.54

See Sampling Data Sheet for details.

1140 Sampled 21B-DS-VGIA-MW08 for Freon-113

1210 Setup on 21B-DS-VGIA-MW10

21B-DS-VGIA-MW10 Total Depth: 22.31

1240 Sampled 21B-DS-VGIA-MW10 for Freon-113

1435 Setup on 21B-DS-VGIA-MW11

21B-DS-VGIA-MW11 Total Depth: 24.18

See Sampling Data Sheet for details.

1520 Sampled 21B-DS-VGIA-MW11 for Freon-113

1535 Mob to dump water + ship supplies

8/10/18
JL

8/12/18

Weather: Sunny 65-85F

0830 Setup to resample 19C-LGIA-MW07

09:00 Explosives & PAHs Collected from 19C-LGIA-MW07

10:00 Setup to resample 20B-UGIA-MW10

10:35 RDX collected from 20B-UGIA-MW10

11:00 Setup to resample 20B-UGIA-MW11

11:45 RDX collected from 20B-UGIA-MW11

12:00 MOB to install temporary well tests on monitoring wells.

~~13:55~~ 17:00 Staff offsite

8/12/18
huc

8/13/18

Weather: Sunny 70-85F

07:40 Setup on 21B-DS-LGIA-MW12

See Sample/Purge log for details

09:00 Sample for Freon-113

09:15 Mob to Tract 20B to collect soil samples

20B-SS12 Collected at 09:45

20B-SB12-04 Collected at 09:48

20B-SB12-08 Collected at 09:52

20B-SB12-10 Collected at 09:55 Analysis Held

20B-SS11 Collected at 10:15

20B-SB11-04 Collected at 10:17

20B-SB11-08 Collected at 10:21

20B-SB11-10 Collected at 10:25 Analysis Held

10:35 Mob to 21B-BPA-UGIA-MW09

21B-BPA-UGIA-MW09 Total Depth: 22.67

See Sample/Purge log for details

11:30 Sampled for Freon-113

11:40 Setup on 21B-DS-LGIA-MW03

See Sample/Purge log for details

12:30 Sampled for VOCs, Metals, Explosives, + Hex Chrom (Dup Collected)

13:50 Setup on 21B-DS-G0104

See Sample/Purge log for details

14:20 Sampled for VOCs, Metals, Explosives, + Hex Chrom

15:45 offside

8/13/18

8/14/18

Weather: Heavy Rain, 65-85 F

0835 Setup on 19B-G0037

19B-G0037

Total Depth: 32.91

See Sampling Data Sheet for details.

09:00 Sampled 19B-G0037 for VOCs, Metals, & Explosives

09:35 Mob to 19B-G0057

Wells abandoned

10:20 Offsite to prepare for demobilization

8/14/18
LBC

9/24/18

Weather: Overcast, 60-75°F.

0830: Stuart Cameron + Matt Wold of ATI and GSI, respectively, meet to prepare for MW install.

0930: Matt Mobilizes to pick up supplies with Dennis Bloomquist

1100: Staff onsite (CHAAP Tract 19B). Stuart Conducts H+S meeting, which includes document signing by Matt, Dennis, and Stuart.

1120 Mob to pick up clean pad from Tract 20^{sec} 21B.

1200 Begin advancing 19B-LGIA-MW02

Split Spun 3-5⁵⁷ recovered @ 12:19 <5% recovery

Split Spun 7-9 recovered @ 12:22 <5% recovery

Split Spun 9-11 recovered @ 12:25 <5% recovered

Split Spun 11-13 recovered @ 12:32 100% recovery

Sand encountered at 11.23 ft bgs.

Split Spun 18-20 recovered @ 12:50

Split Spun ~~24~~ 23-25 recovered @ 12:57

Split Spun 28-30 recovered @ 13:04

Split Spun 33-35 recovered @ 13:16

Split Spun ~~36~~ 35-37 recovered @ 13:28

"Blue Clay" encountered at 36.95 ft.

14:10 Set screen at 19B-LGIA-MW02 from 27-37 ft bgs.

14:50 Mob offsite to pick up supplies.

15:15 Begin advancing 19B-UGIA-MW01.

16:10 Set 19B-UGIA-MW01 from 9.5-14.5 bgs.

17:30 Staff Mob offsite.

9/24/18
131

9/26/18

CHAAP Tract 19B Well Installation

Weather: Sunny, 50-70°F

0730 Matt Wold, Stuart Cameron meet at GSI office.

0800 James Timell & Randall Ureste at GSI.

0830 Mob to site (Tract 19B)

0900 Setup on 19B-LGIA-MW04

0920 Begin advancing borehole

10:17 Encountered "Blue Clay" at ~~38.5~~^{28.5} ft. Screen set from ~~27.5-37.5~~²⁹⁻³⁹ ft.

10:55 Begin advancing 19B-LGIA-MW03
Screen set from 9-19 ft bgs.

12:30 Mob to 19B-LGIA-MW06

12:57 Begin advancing augers.

14:00 Encountered "Blue Clay" at 38.2 ft.
Screen set from 28-38 ft bgs.

16:00 Staff offsite following equipment Decontamination.

9/26/18
LBC

9/27/18

CHAAP Tract 19B Well Install

Weather: Sunny, 55-75F

0730 Matt Wold, Stuart Cameron, + Randall Vieste meet at GSI
+ conduct H&S meeting

0800 Mob to Tract 19B

0810 Begin advancing 19B-UGIA-MW05

1030 Complete well. Begin Surface completion.

1500 Concrete truck arrives and pads + Bollards are
installed.

1600 Shift off site

9/27/18
J3

APPENDIX C

BORING/DRILLING LOGS

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Background Boring Logs Soil Samples

Note: BKRD-LGIA-MW15 was installed in boring BKRD-SS/SB07;
see boring log BKRD-LGIA-MW15 for BKRD-SS/SB07. For soil
description at BKRD-SS/SB01 through BKRD-SS/SB06, see FSRs.

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HTRW DRILLING LOG				DISTRICT <i>USACE - Omaha</i>		HOLE NUMBER <i>BKRD-SB08</i>	
1. COMPANY NAME <i>HydroGeoLogic, Inc.</i>				2. DRILLING CONTRACTOR <i>GSI Engineering</i>		SHEET 1 OF 2 SHEETS	
3. PROJECT <i>CHAAP BKRD</i>				4. LOCATION <i>BKRD2, CHAAP, NE</i>			
5. NAME OF DRILLER <i>Matthew Wald</i>				6. MANUFACTURER'S DESIGNATION OF DRILL <i>6600 Geoprobe</i>			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <i>Geoprobe Dual Tube Sampler 4"x2"</i>				8. HOLE LOCATION <i>SB08</i>			
				9. SURFACE ELEVATION <i>NA</i>			
				10. DATE STARTED <i>3.14.18</i>		11. DATE COMPLETED <i>3.14.18</i>	
12. OVERBURDEN THICKNESS <i>NA</i>				15. DEPTH GROUNDWATER ENCOUNTERED <i>NA</i>			
13. DEPTH DRILLED INTO ROCK <i>NA</i>				16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>			
14. TOTAL DEPTH OF HOLE <i>5' bgs</i>				17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>			
18. GEOTECHNICAL SAMPLES <i>NA</i>		DISTURBED <i>NA</i>		UNDISTURBED <i>NA</i>		19. TOTAL NUMBER OF CORE BOXES <i>NA</i>	
20. SAMPLES FOR CHEMICAL ANALYSIS <i>Yes</i>		VOC <i>X</i>		METALS <i>X</i>		OTHER (SPECIFY) <i>Explosives</i>	
						OTHER (SPECIFY) <i>PAHs</i>	
22. DISPOSITION OF HOLE <i>Soil boring</i>		BACKFILLED <i>X</i>		MONITORING WELL		23. SIGNATURE OF INSPECTOR <i>A. Leospeck</i>	
LOCATION SKETCH/COMMENTS							
SCALE: <i>Not to Scale</i>							
PROJECT <i>CHAAP BKRD</i>						HOLE NO <i>BKRD-SB08</i>	

(CONTINUATION SHEET)

[illegible]

BKRD-SB08

PROJECT

INSPECTOR

SHEET

SHEETS

CHAAP-BKRD

SPECTOR
K. Wierens / A. Nedgepoh

2 OF 2

ELEV.
(a)

DEPTH
(b)

DESCRIPTION OF MATERIALS

(c)

FIELD SCREENING
P I Δ
(d)

GEOTECH SAMPLE
QR CORE BOX NO.
(e)

ANALYTICAL
SAMPLE NO.:

Recovery
BLOW COUNT
(g)

REMARKS
(h) ~~5~~

1) Samples

Top Soil

Q. Q

100%

Collect surface
BKRD-5508

Lean Clay (CL) 90%
Fines, 10% F. Sand, V.
Dark gray (10% 3/1),
L. to M. plastic, Firm, Dry
No odor or staining

0.0

2

3

4

grading to Olive Bn
(2.5 y ^{1/3}), Increase silt
mottled Fe stain, Fr. F.
gravel, soft



1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 84

4-S'58 Sample
BKRD-SR08-5
⑤, 1340

 \leq

End of boring @ 5' bgs 50

3.14.18

| |
|---------|
| PROJECT |
|---------|

CHAAP BKRD

| |
|---------|
| HOLE NO |
|---------|

HOLE NO
BKRD-5B08

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>BKRD-SB09</i> | |
|--|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSI Engineering</i> | | SHEET
<i>1</i> OF <i>2</i> SHEETS | |
| 3. PROJECT
<i>CHAAP BKRD</i> | | | | 4. LOCATION
<i>BKRD2, CHAAP, NE</i> | | | |
| 5. NAME OF DRILLER
<i>Matthew Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>6600 Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>Geoprobe Dual Tube Sampler 4"x2"</i> | | | | 8. HOLE LOCATION
<i>SB09</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>3.14.18</i> | | 11. DATE COMPLETED
<i>3.14.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>NA</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>5' 6.95</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES
<i>NA</i> | | DISTURBED
<i>NA</i> | | UNDISTURBED
<i>NA</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>NA</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>Yes</i> | | VOC
<i>X</i> | | METALS
<i>X</i> | | OTHER (SPECIFY)
<i>Explosives</i> | |
| | | | | | | OTHER (SPECIFY)
<i>PAHs</i> | |
| 22. DISPOSITION OF HOLE
<i>Soil boring</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Heidebrecht</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| SCALE: <i>Not to Scale</i> | | | | | | | |
| | | | | | | | |
| PROJECT
<i>CHAAP BKRD</i> | | | | | | HOLE NO
<i>BKRD-SB09</i> | |

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>BKRD-SB10</i> | |
|---|--|------------------------|--|---|--|--|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSI Engineering</i> | | SHEET
<i>1</i> OF <i>2</i> SHEETS | |
| 3. PROJECT
<i>CHAAP BKRD</i> | | | | 4. LOCATION
<i>BKRD2, CHAAP, NE</i> | | | |
| 5. NAME OF DRILLER
<i>Matthew Wald</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>6600 Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>Geoprobe Dualtube Sampler 4"x2"</i> | | | | 8. HOLE LOCATION
<i>SB10</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>3.14.18</i> | | 11. DATE COMPLETED
<i>3.14.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>NA</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>5' bgs</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES
<i>NA</i> | | DISTURBED
<i>NA</i> | | UNDISTURBED
<i>NA</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>NA</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>Yes</i> | | VOC
<i>X</i> | | METALS
<i>X</i> | | OTHER (SPECIFY)
<i>Explosives</i> | |
| | | | | | | OTHER (SPECIFY)
<i>PAHs</i> | |
| 22. DISPOSITION OF HOLE
<i>Soil boring</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Heideger</i> | |
| <div style="display: flex; justify-content: space-between;"> <div> LOCATION SKETCH/COMMENTS </div> <div> SCALE: <i>Not to Scale</i> </div> </div> | | | | | | | |
| | | | | | | | |
| PROJECT
<i>CHAAP BKRD</i> | | | | | | HOLE NO
<i>BKRD-SB10</i> | |

(CONTINUATION SHEET)

BKRD-SB/D

SHEET

SHEETS

2 OF 2

PROJECT

INSPECTOR

CHAAP-BKRD

SPECTOR
K. Wieruszko / A. Kedzior

ELEV.
(a)

DEPTH
(b)

DESCRIPTION OF MATERIALS

(c)

FIELD SCREENING
P2D
(d)

GEOTECH SAMPLE
QR CORE BOX NO.
(e)

| | |
|--------------------------|-------------------------------|
| ANALYTICAL
SAMPLE NO. | <i>Recovery</i>
BLOW COUNT |
| (f) | (g) |

REMARKS
(h) - 5.

2/5

Top Soil

Q. Q

1007

Collect Surface
BKRD-5510

Silty Clay (CL), 90% fines
10% f. Sand, Olive gray
(5y 5/2), L. plastic,
Firm, dry

0.0

0.0

1000

4-S'58 Sample
BKRD-SB10-5
C1510

End of boring @ 5' bgs Δ

3.14.18

PROJECT

CHAAP BKRD

| | |
|---------|--|
| HOLE NO | |
|---------|--|

HOLE NO
BKRD-SB/0

| HTRW DRILLING LOG | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>BKRD-SB11</i> | | |
|--|--|--------------------------------|---|--------------------------|--------------------------------------|---|----------------------------|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | 2. DRILLING CONTRACTOR
<i>GSI Engineering</i> | | | SHEET
<i>1</i> OF <i>2</i> SHEETS | |
| 3. PROJECT
<i>CHAAP BKRD</i> | | | 4. LOCATION
<i>BKRD2, CHAAP, NE</i> | | | | |
| 5. NAME OF DRILLER
<i>Matthew Wald</i> | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>6600 Geoprobe</i> | | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>Geoprobe Dual Tube Sampler 4"x2"</i> | | | 8. HOLE LOCATION
<i>SB11</i> | | | | |
| | | | 9. SURFACE ELEVATION
<i>NA</i> | | | | |
| | | | 10. DATE STARTED
<i>3.14.18</i> | | 11. DATE COMPLETED
<i>3.14.18</i> | | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>NA</i> | | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | | |
| 14. TOTAL DEPTH OF HOLE
<i>5' bgs</i> | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | | |
| 18. GEOTECHNICAL SAMPLES
<i>NA</i> | | DISTURBED
<i>NA</i> | | UNDISTURBED
<i>NA</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>NA</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>Yes</i> | | VOC
<i>X</i> | | METALS
<i>X</i> | | OTHER (SPECIFY)
<i>Explosives</i> | |
| | | OTHER (SPECIFY)
<i>PAHs</i> | | OTHER (SPECIFY) | | 21. TOTAL CORE
<i>NA</i> % | |
| 22. DISPOSITION OF HOLE
<i>Soil boring</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Heald</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | SCALE: <i>Not to Scale</i> |
| | | | | | | | |
| PROJECT
<i>CHAAP BKRD</i> | | | | | | HOLE NO
<i>BKRD-SB11</i> | |

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>BKRD-SB12</i> | |
|--|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSI Engineering</i> | | SHEET
<i>1</i> OF <i>2</i> SHEETS | |
| 3. PROJECT
<i>CHAAP BKRD</i> | | | | 4. LOCATION
<i>BKRD2, CHAAP, NE</i> | | | |
| 5. NAME OF DRILLER
<i>Matthew Wald</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>6600 Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>Geoprobe Dual Tube Sampler 4"x2"</i> | | | | 8. HOLE LOCATION
<i>SB12</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>3.14.18</i> | | 11. DATE COMPLETED
<i>3.14.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>NA</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>5' 6.95</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES
<i>NA</i> | | DISTURBED
<i>NA</i> | | UNDISTURBED
<i>NA</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>NA</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>Yes</i> | | VOC
<i>X</i> | | METALS
<i>X</i> | | OTHER (SPECIFY)
<i>Explosives</i> | |
| | | | | | | OTHER (SPECIFY)
<i>PAHs</i> | |
| 22. DISPOSITION OF HOLE
<i>Soil boring</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Heasbrook</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| SCALE: <i>Not to Scale</i> | | | | | | | |
| | | | | | | | |
| PROJECT
<i>CHAAP BKRD</i> | | | | | | HOLE NO
<i>BKRD-SB12</i> | |

(CONTINUATION SHEET)

[illegible]

BRD-SB12

PROJECT

CHAAP-BKRA

INSPECTOR

K. Wierenso / A. Hedgerock

SHEET

SHEETS

2 OF 2

ELEV.
(a)

DEPTH
(b)

DESCRIPTION OF MATERIALS

(c)

FIELD SCREENING
P3D
(d)

GEOTECH SAMPLE
QR CORE BOX NO.
(e)

ANALYTICAL
SAMPLE NO
(f)

~~Recovery~~
BLOW COUNT
(n)

REMARKS
(h) - 5.

h) Samples

Top Soil

Q. Q

100%

Collect Surface
BKRD-551Z

Silty Clay (CL), 90%
Fines, 10% F. Sand,
Olive gray (5y 5/2)
L. to M. plastic, Firm,
Dry.

0.0

2

3

4

Same w/ Fe Stains

00

1009

4-5'58 Sample
BKRD-SR12-5
@ 1500

5.

| | |
|------------------------|----|
| End of boring @ 5' bgs | 50 |
|------------------------|----|

3.14.18

PROJECT

CHAAP BKRD

| | |
|---------|--|
| HOLE NO | |
|---------|--|

HOLE NO
RKRD-SR12

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>BKRD-SB13</i> | |
|--|--|------------------------|--|---|--|--|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSI Engineering</i> | | SHEET
<i>1</i> OF <i>2</i> SHEETS | |
| 3. PROJECT
<i>CHAAP BKRD</i> | | | | 4. LOCATION
<i>BKRD2, CHAAP, NE</i> | | | |
| 5. NAME OF DRILLER
<i>Matthew Wald</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>6600 Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>Geoprobe Dual Tube Sampler 4"x2"</i> | | | | 8. HOLE LOCATION
<i>SB13</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>3.14.18</i> | | 11. DATE COMPLETED
<i>3.14.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>NA</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>5' bgs</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES
<i>NA</i> | | DISTURBED
<i>NA</i> | | UNDISTURBED
<i>NA</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>NA</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>Yes</i> | | VOC
<i>X</i> | | METALS
<i>X</i> | | OTHER (SPECIFY)
<i>Episodic</i> | |
| | | | | | | OTHER (SPECIFY)
<i>PAHs</i> | |
| 22. DISPOSITION OF HOLE
<i>Soil boring</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Heagerty</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| SCALE: <i>Not to Scale</i> | | | | | | | |
| | | | | | | | |
| PROJECT
<i>CHAAP BKRD</i> | | | | | | HOLE NO
<i>BKRD-SB13</i> | |

(CONTINUATION SHEET)

BRD-SB 13

CHAAP-BKRD

R. Wierusz / A. Kiedrzycki

SHEETS

2 OF 2

| | | | |
|---------|------------|---------|-----------|
| PROJECT | CHAAP BERN | HOLE NO | BERN-SB13 |
|---------|------------|---------|-----------|

(Proponent: CECW-EG)

(CONTINUATION SHEET)

BKRD-SB14

BKRD CHAAP

A. Hedgepath

SHEETS

1 OF 7

| | |
|-----------------------|----------------------|
| PROJECT
BERN-CHAAP | HOLE NO
BERN-SB14 |
|-----------------------|----------------------|

PROJECT
BKR-CHAAP

FILE NO
BKRD-SB14

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

BKRD-SB18

PROJECT

BKRD CHAAP

INSPECTOR

A. Hedgepath

SHEET

SHEETS

1 OF 1

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|------------------------|--|---------------------------------|-------------------------------|---|
| | | Topsoil | 0.0 | | | 100% | HA to 5' bgs
due to UXO
Avoidance |
| | 1 | Same as above | | | | 100% | - Surface Sample
BKRD-SS18
@ 1320 |
| | 2 | Sharp transition to Lean
Clay (95% Fine, 5% Sand)
moist, firm, M. plastic
w/ Fe Steins, no odor
light grey (5y 7/1) | 0.0 | | | 100% | |
| | 3 | Same as above | | | | 100% | |
| | 4 | Same as above | 0.0 | | | 100% | A-5' SB Sample
BKRD-SB18-5
@ 1325 |
| | 5 | End of Boring at
- not back filled due | | 5' bgs
to future MW | | | Installation |
| | | | | 3.19.18 | | | |

PROJECT

BKRD-CHAAP

HOLE NO

BKRD-SB18

(CONTINUATION SHEET)

BERD-SB19

SHEET 1 OF 2 SHEETS

BKRA CHAAP

A. Hedgepath

| | |
|------------|-----------|
| PROJECT | HOLE NO |
| BERN-CHAAP | BERN-SB19 |

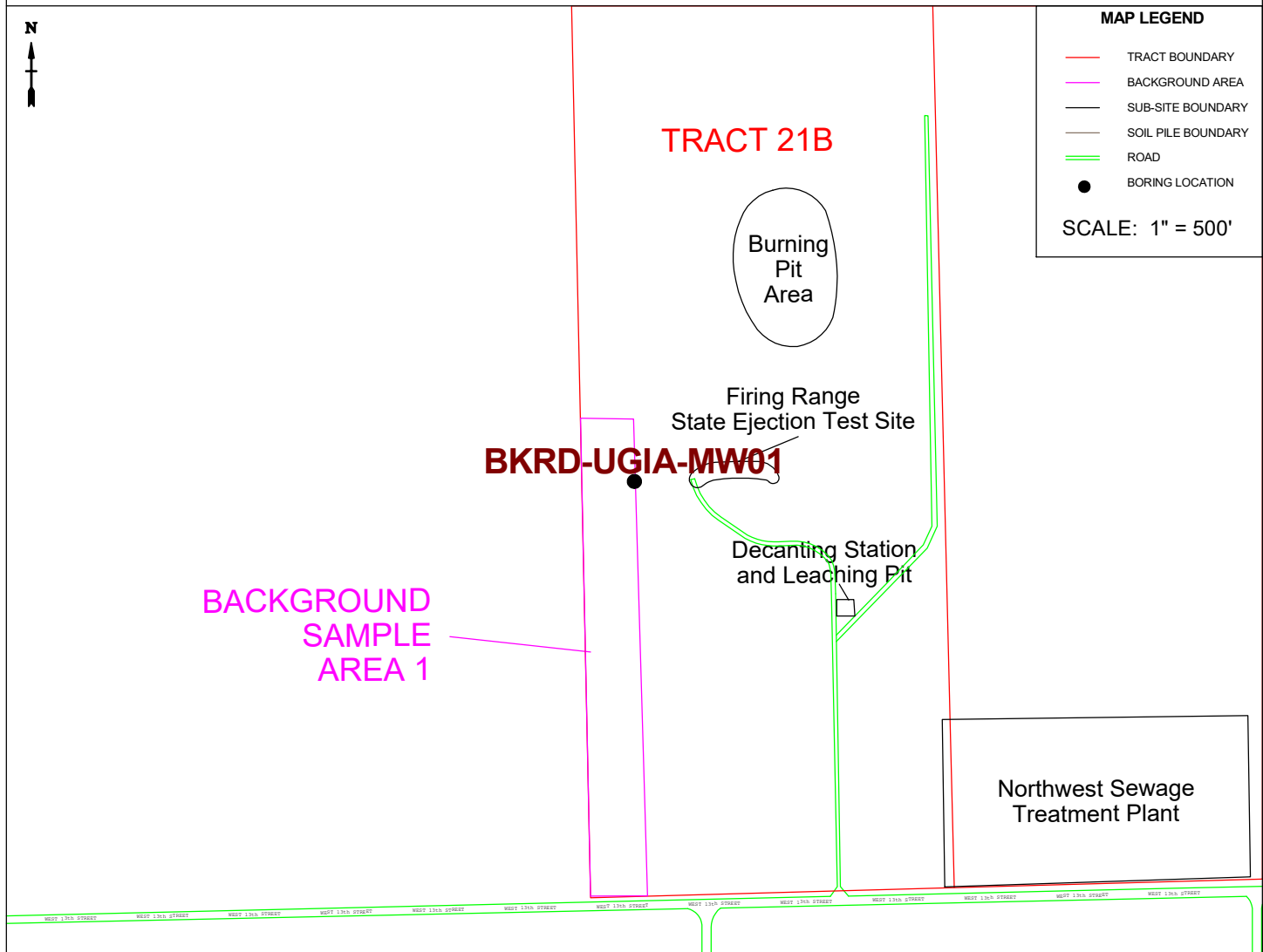
(Proponent: CECW-EG)

**Background Boring Logs
Monitoring Wells**

| | | | | | |
|--|-------------------|--|---------------------------------------|----------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
BKRD-UGIA-MW01 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 5 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
M. Wold | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
404751.5 North 2048150.0 East | | | |
| | | 9. SURFACE ELEVATION
1914.3' MSL | | | |
| | | 10. DATE STARTED
5/4/2018 | 11. DATE COMPLETED
5/4/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
21 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
16.22 ft on 5/5/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
29.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
16.14 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW01

| PROJECT | | CHAAP, Grand Island, Nebraska | DISTRICT | US Army Corps of Engineers - Omaha District | | | | SHEET 2 OF 5 SHEETS | |
|--------------|--------------|--|----------|---|--|---------------------------------|-------------------|---|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1914.3 | 0 | Overburden: Intermingled 5Y 5/2 SILTY CLAY, Dark Brown TOPSOIL, and 2.5Y 5/2 SILTY CLAY. Hard and dense, dry.. (5Y 5/2) | | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery | |
| 1913.3 | 1 | | | | | | | | |
| 1912.3 | 2 | | | | | | | | |
| 1911.3 | 3 | | | | | | | | |
| 1910.3 | 4 | | | | | | | | |
| 1909.3 | 5 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
5-7 ft.
10% Rec. | | 2 | | |
| 1908.3 | 6 | | | | | | 2 | | |
| | | | | | | | 3 | | |
| | | | | | | | 5 | | |
| 1907.3 | 7 | | | | | | 6 | | |
| | | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained mottling. (5Y 5/2) | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
7-9 ft.
10% Rec. | | 7 | | |
| 1906.3 | 8 | | | | | | 9 | | |
| | | | | | | | 15 | | |
| 1905.3 | 9 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW01

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW01

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 5 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1905.3 | 9 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained mottling. (5Y 5/2) (continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
9-11 ft.
75% Rec. | | 4 | |
| | | | | | | 6 | |
| 1904.3 | 10 | | | | | 7 | |
| | | | | | | 10 | |
| 1903.3 | 11 | | | | | | |
| | | | | | | | |
| 1902.3 | 12 | | | | | | |
| | | | | | | | |
| 1901.3 | 13 | | | | | | |
| | | | | | | | |
| 1900.3 | 14 | | | | | | |
| | | | | | | | |
| 1899.3 | 15 | | | | | | |
| | | | | | | 2 | |
| | | | | | | 2 | |
| 1898.3 | 16 | | | | | 2 | |
| | | | | | | 4 | |
| 1897.3 | 17 | | | | | 3 | |
| | | | | | | 3 | |
| 1896.3 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

BKRD-UGIA-MW01

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW01

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 4 OF 5 SHEETS | |
|--------------|--------------|---|--|--|---------------------------------|---|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1896.3 | 18 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained mottling. (2.5Y 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
19-21 ft.
100% Rec. | | 4 | | | |
| | 4 | | | | | | | | |
| 1895.3 | 19 | | | | | 2 | | | |
| | | | | | | 2 | | | |
| 1894.3 | 20 | | | | | 2 | | | |
| | | | | | | 3 | | | |
| 1893.3 | 21 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 7
21-23 ft.
100% Rec. | | 2 | | | |
| | | | | | | 4 | | | |
| 1892.3 | 22 | | | | | 7 | | | |
| | | | | | | 8 | | | |
| 1891.3 | 23 | | | | | | | | |
| 1890.3 | 24 | | | | | | | | |
| 1889.3 | 25 | | | | | | | | |
| 1888.3 | 26 | | | | | | | | |
| 1887.3 | 27 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW01

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW01

| PROJECT | | DISTRICT | | HOLE NO | | | SHEETS | |
|-------------------------------|--------------|--|-----------------------------------|--|---------------------------------|-------------------|----------------|---|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | BKRD-UGIA-MW01 | | | 5 | 5 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1887.3 | 27 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | | |
| 1886.3 | 28 | | | | | | | |
| 1885.3 | 29 | | | | | | | |
| 1884.3 | 30 | Bottom of Borehole @ 29.5 ft
10 Gallons of Water Lost During Drilling
Heaving Sands 21-29.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | |
| 1883.3 | 31 | | | | | | | |
| 1882.3 | 32 | | | | | | | |
| 1881.3 | 33 | | | | | | | |
| 1880.3 | 34 | | | | | | | |
| 1879.3 | 35 | | | | | | | |
| 1878.3 | 36 | | | | | | | |

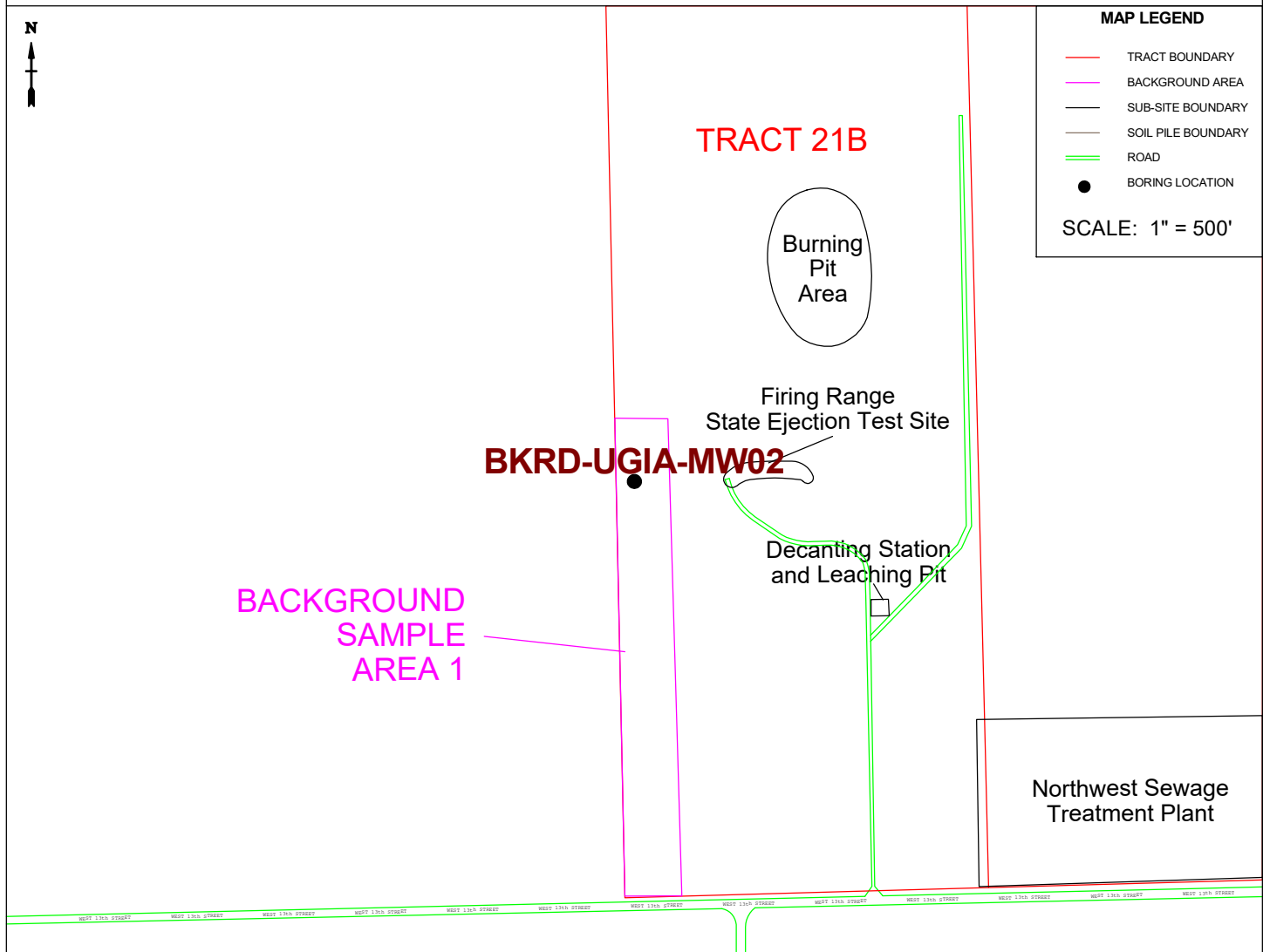
PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW01

| | | | | | |
|--|-------------------|--|---------------------------------------|--------------------------------|----------------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
BKRD-UGIA-MW02 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 5 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
M. Wold | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
404751.0 North 2048047.4 East | | | |
| | | 9. SURFACE ELEVATION
1914.7' MSL | | | |
| | | 10. DATE STARTED
5/4/2018 | | 11. DATE COMPLETED
5/4/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
20 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
16.34 ft on 5/5/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
28.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
14.97 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | | 21. TOTAL CORE RECOVERY
N/A % |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



| | |
|--|----------------------------|
| PROJECT CHAAP Grand Island, Nebraska | HOLE NO BKRD-UGIA-MW02 |
|--|----------------------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW02

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 5 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|--|
| 1914.7 | 0 | Overburden: Intermingled 5Y 5/2 SILTY CLAY, Dark Brown TOPSOIL, and 2.5Y 5/2 SILTY CLAY. Hard and dense, dry.. (5Y 5/2) | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1913.7 | 1 | | | | | | |
| 1912.7 | 2 | | | | | | |
| 1911.7 | 3 | | | | | | |
| 1910.7 | 4 | | | | | | |
| 1909.7 | 5 | | | | | | |
| 1908.7 | 6 | | | | | | |
| 1907.7 | 7 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
7-9 ft.
20% Rec. | | 5 | |
| 1906.7 | 8 | | | | | 7 | |
| | | | | | | 8 | |
| | | | | | | 11 | |
| 1905.7 | 9 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained mottling. (5Y 5/2) | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

BKRD-UGIA-MW02

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW02

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|--|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 3 | | | | 5 | | SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1905.7 | 9 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained mottling. (5Y 5/2) (continued) | | | | | | | | | |
| 1904.7 | 10 | | | | | | | | | | |
| 1903.7 | 11 | | | | | | | | | | |
| 1902.7 | 12 | | | | | | | | | | |
| 1901.7 | 13 | | | | | | | | | | |
| 1900.7 | 14 | | | | | | | | | | |
| 1899.7 | 15 | | | | | | | | | | |
| 1898.7 | 16 | | | | | | | | | | |
| 1897.7 | 17 | | | | | | | | | | |
| 1896.7 | 18 | | | | | | | | | | |
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(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW02

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 4 OF 5 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1896.7 | 18 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained mottling. (2.5Y 4/1) (continued) | | | | 2 | |
| | | | | | | 3 | |
| 1895.7 | 19 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
19-21 ft.
100% Rec. | | 2 | |
| | | | | | | 3 | |
| 1894.7 | 20 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | 3 | |
| | | | | | | 3 | |
| 1893.7 | 21 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
21-23 ft.
100% Rec. | | 3 | |
| | | | | | | 4 | |
| 1892.7 | 22 | | | | | 4 | |
| | | | | | | 5 | |
| 1891.7 | 23 | | | | | | |
| | | | | | | | |
| 1890.7 | 24 | | | | | | |
| | | | | | | | |
| 1889.7 | 25 | | | | | | |
| | | | | | | | |
| 1888.7 | 26 | | | | | | |
| | | | | | | | |
| 1887.7 | 27 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW02

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


BKRD-UGIA-MW02

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 5 | | | | 5 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1887.7 | 27 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | | | | | |
| 1886.7 | 28 | | | | | | | | | | |
| 1885.7 | 29 | Bottom of Borehole @ 28.5 ft
10 Gallons of Water Lost During Drilling
Heaving Sands20-28.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | | | |
| 1884.7 | 30 | | | | | | | | | | |
| 1883.7 | 31 | | | | | | | | | | |
| 1882.7 | 32 | | | | | | | | | | |
| 1881.7 | 33 | | | | | | | | | | |
| 1880.7 | 34 | | | | | | | | | | |
| 1879.7 | 35 | | | | | | | | | | |
| 1878.7 | 36 | | | | | | | | | | |

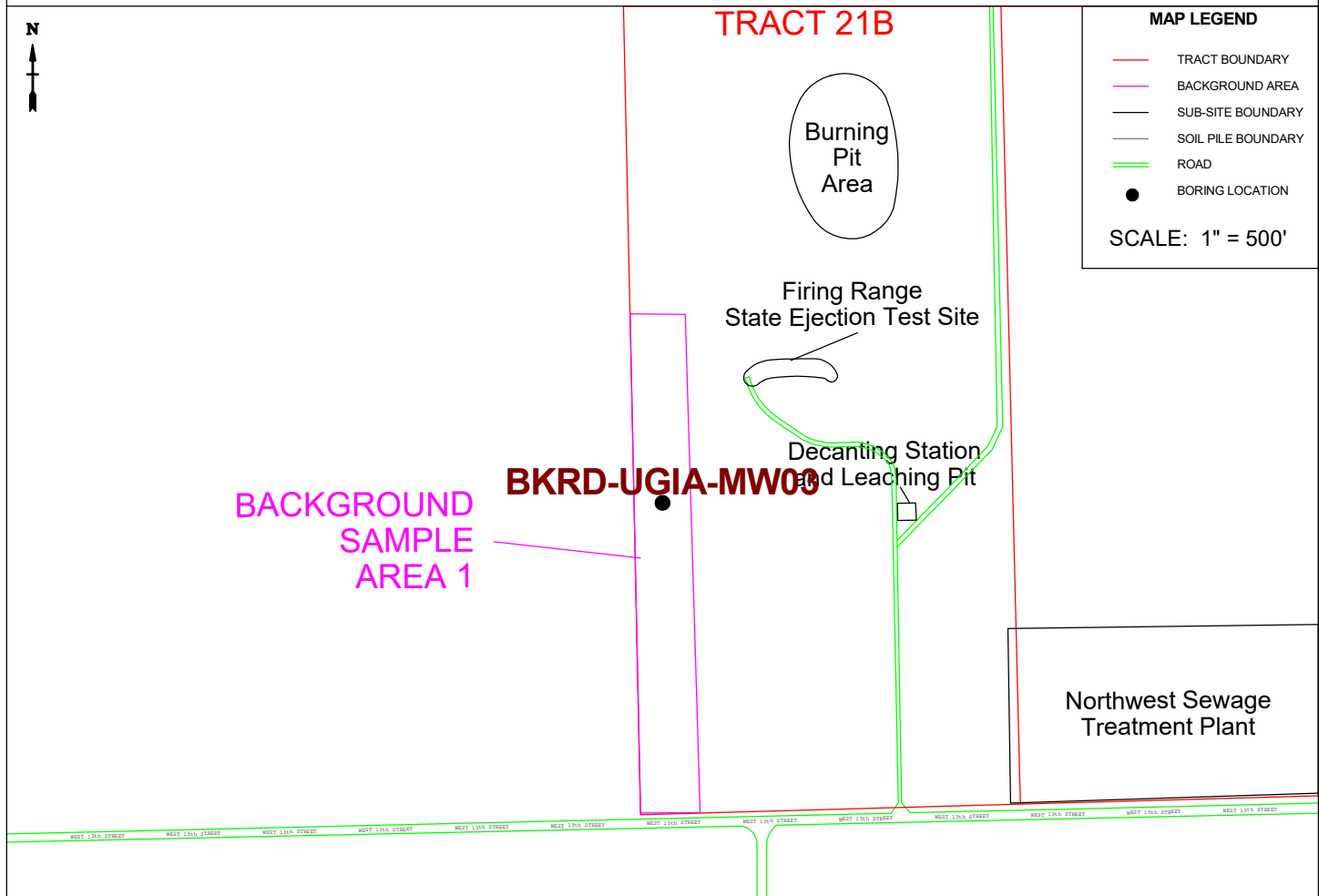
PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW02

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|--|-------------------|--|---------------------------------------|--|----------------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
BKRD-UGIA-MW03 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 5 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
M. Wold | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
404399.4 North 2048081.9 East | | | |
| | | 9. SURFACE ELEVATION
1915.6' MSL | | | |
| | | 10. DATE STARTED
5/4/2018 | 11. DATE COMPLETED
5/4/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
19.5 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
16.98 ft on 5/5/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
28.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
16.92 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | | 21. TOTAL CORE RECOVERY
N/A % |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW03

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 2 OF 5 SHEETS | |
|--------------|--------------|---|--|-----------------------------------|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1915.6 | 0 | Overburden: Intermingled 5Y 5/2 SILTY CLAY, Dark Brown TOPSOIL, and 2.5Y 5/2 SILTY CLAY. Hard and dense, dry.. (5Y 5/2) | | | | | | | |
| 1914.6 | 1 | | | | | | | | |
| 1913.6 | 2 | | | | | | | | |
| 1912.6 | 3 | | | | | | | | |
| 1911.6 | 4 | | | | | | | | |
| 1910.6 | 5 | | | | | | | | |
| 1909.6 | 6 | | | | | | | | |
| 1908.6 | 7 | | | | | | | | |
| 1907.6 | 8 | | | | | | | | |
| 1906.6 | 9 | | | | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

BKRD-UGIA-MW03

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW03

| PROJECT | | DISTRICT | | ANALYTICAL | | | SHEET | | OF | | SHEETS | |
|-------------------------------|--------------|--|--|--|---------------------------------|-------------------|----------------|--|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | 3 | | 5 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | | |
| 1906.6 | 9 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained mottling. (5Y 5/2) | | | | | | | | | | |
| 1905.6 | 10 | | | | | | | | | | | |
| 1904.6 | 11 | | | | | | | | | | | |
| 1903.6 | 12 | | | | | | | | | | | |
| 1902.6 | 13 | | | | | | | | | | | |
| 1901.6 | 14 | | | | | | | | | | | |
| 1900.6 | 15 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
15-17 ft.
100% Rec. | | 2 | | | | | | |
| 1899.6 | 16 | | | | | 1 | | | | | | |
| | | | | | | 3 | | | | | | |
| | | | | | | 5 | | | | | | |
| 1898.6 | 17 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
17-19 ft.
100% Rec. | | 1 | | | | | | |
| | | | | | | 2 | | | | | | |
| 1897.6 | 18 | | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW03

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW03

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 4 OF 5 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1897.6 | 18 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained mottling. (5Y 5/2) (continued) | | | | 2 | |
| | | | | | | 4 | |
| 1896.6 | 19 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
19-21 ft.
100% Rec. | | 4 | |
| | | | | | | 6 | |
| 1895.6 | 20 | | | | | 7 | |
| | | | | | | 13 | |
| 1894.6 | 21 | | | | | | |
| | | | | | | | |
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| 1893.6 | 22 | | | | | | |
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| 1892.6 | 23 | | | | | | |
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| 1891.6 | 24 | | | | | | |
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| 1890.6 | 25 | | | | | | |
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| 1889.6 | 26 | | | | | | |
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| | | | | | | | |
| | | | | | | | |
| 1888.6 | 27 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW03

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW03

| PROJECT | | DISTRICT | | SHEET | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 5 | | | 5 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| 1888.6 | 27 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | | | | | | | |
| 1887.6 | 28 | | | | | | | | | |
| 1886.6 | 29 | Bottom of Borehole @ 28 ft
10 Gallons of Water Lost During Drilling
Heaving Sands19.5-28 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | | |
| 1885.6 | 30 | | | | | | | | | |
| 1884.6 | 31 | | | | | | | | | |
| 1883.6 | 32 | | | | | | | | | |
| 1882.6 | 33 | | | | | | | | | |
| 1881.6 | 34 | | | | | | | | | |
| 1880.6 | 35 | | | | | | | | | |
| 1879.6 | 36 | | | | | | | | | |

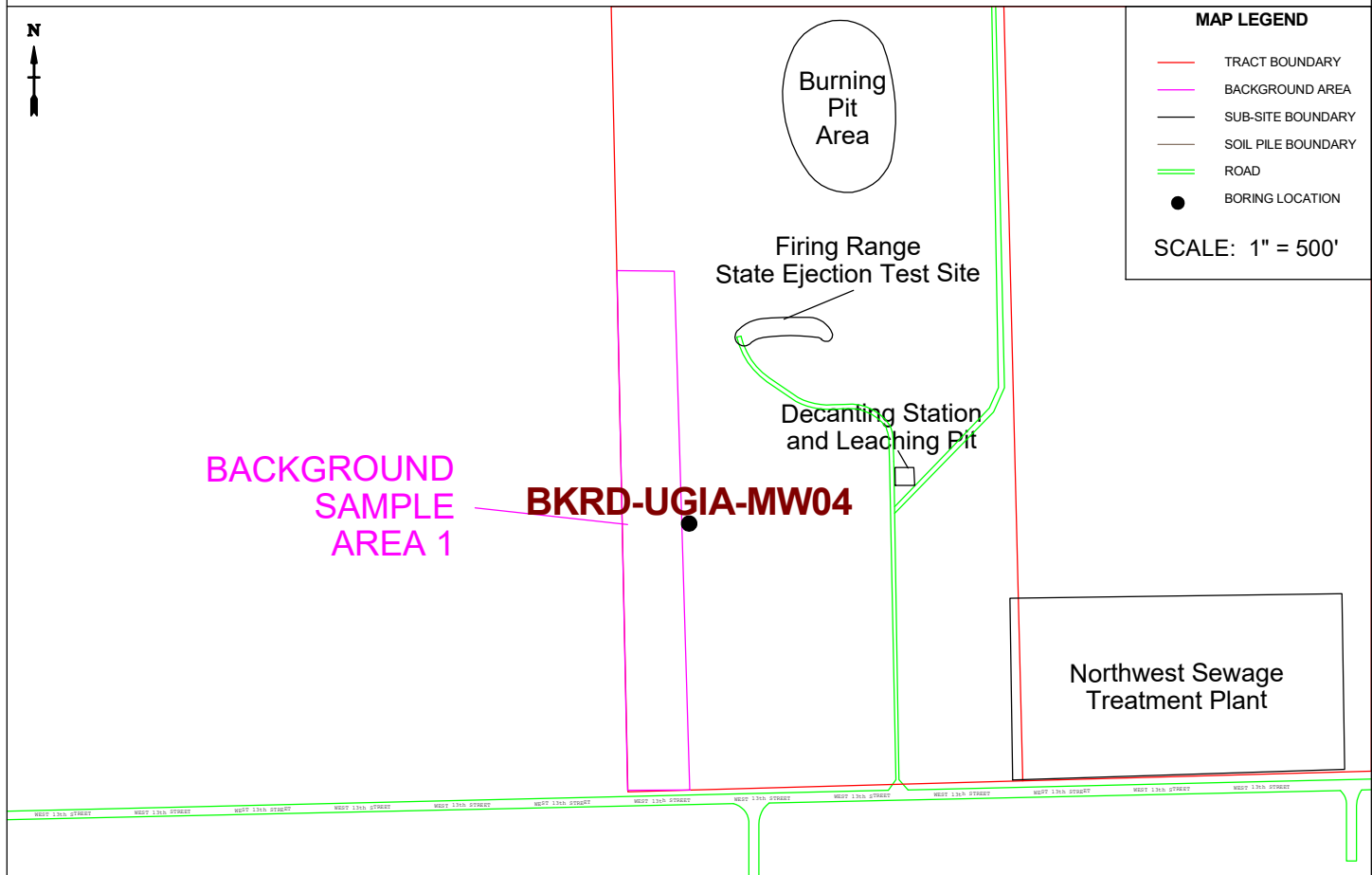
PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW03

| | | | | | |
|--|-------------------|--|---------------------------------------|----------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
BKRD-UGIA-MW04 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 5 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
M. Wold | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
404245.0 North 2048187.9 East | | | |
| | | 9. SURFACE ELEVATION
1914.3' MSL | | | |
| | | 10. DATE STARTED
5/3/2018 | | 11. DATE COMPLETED
5/3/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
20 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
16.18 ft on 5/4/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
28.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
15.84 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW04

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 2 OF 5 SHEETS | |
|--------------|--------------|---|--|--|--|---|-------------------|---|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1914.3 | 0 | Overburden: Intermingled 5Y 5/2 SILTY CLAY, Dark Brown TOPSOIL, and 2.5Y 5/2 SILTY CLAY. Hard and dense, dry.. (5Y 5/2) | | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery | |
| 1913.3 | 1 | | | | | | | | |
| 1912.3 | 2 | | | | | | | | |
| 1911.3 | 3 | | | | | | | | |
| 1910.3 | 4 | | | | | | | | |
| 1909.3 | 5 | | | | | | | | |
| 1908.3 | 6 | | | | | | | | |
| 1907.3 | 7 | | | | | | | | |
| 1906.3 | 8 | | | | | | | | |
| 1905.3 | 9 | | | | | | | | |
| | | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
8.5-10.5 ft.
100% Rec. | | 2 | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW04

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW04

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | SHEET 3 OF 5 SHEETS | |
|--------------|--------------|---|--|---|---------------------------------|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1905.3 | 9 | | | | | 2 | | |
| | | | | | | 3 | | |
| 1904.3 | 10 | | | | | 4 | | |
| | | | | | | 4 | | |
| 1903.3 | 11 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
10.5-12.5 ft.
100% Rec. | | 5 | | |
| | | | | | | 6 | | |
| 1902.3 | 12 | | | | | 6 | | |
| | | | | | | 3 | | |
| 1901.3 | 13 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
12.5-14.5 ft.
100% Rec. | | 4 | | |
| | | | | | | 5 | | |
| 1900.3 | 14 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (5Y 5/2) | | | | 5 | | |
| | | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained mottles. (5GY 4/1) | | | | | | |
| 1899.3 | 15 | | | | | | | |
| | | | | | | | | |
| 1898.3 | 16 | | | | | | | |
| | | | | | | | | |
| 1897.3 | 17 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (5Y 5/2) | | | | | | |
| | | | | | | | | |
| 1896.3 | 18 | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW04

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW04

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 4 OF 5 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1896.3 | 18 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (5Y 5/2) (continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
18.5-20.5 ft.
100% Rec. | | 3 | |
| 1895.3 | 19 | | | | | 5 | |
| 1894.3 | 20 | | | | | 7 | |
| 1893.3 | 21 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | 8 | |
| 1892.3 | 22 | | | | | | |
| 1891.3 | 23 | | | | | | |
| 1890.3 | 24 | | | | | | |
| 1889.3 | 25 | | | | | | |
| 1888.3 | 26 | | | | | | |
| 1887.3 | 27 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

BKRD-UGIA-MW04

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW04

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 5 | | | | 5 | | 5 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1887.3 | 27 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | | | | | |
| 1886.3 | 28 | | | | | | | | | | |
| 1885.3 | 29 | Bottom of Borehole @ 28.5 ft
10 Gallons of Water Lost During Drilling
Heaving Sands19.7-28.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | | | |
| 1884.3 | 30 | | | | | | | | | | |
| 1883.3 | 31 | | | | | | | | | | |
| 1882.3 | 32 | | | | | | | | | | |
| 1881.3 | 33 | | | | | | | | | | |
| 1880.3 | 34 | | | | | | | | | | |
| 1879.3 | 35 | | | | | | | | | | |
| 1878.3 | 36 | | | | | | | | | | |

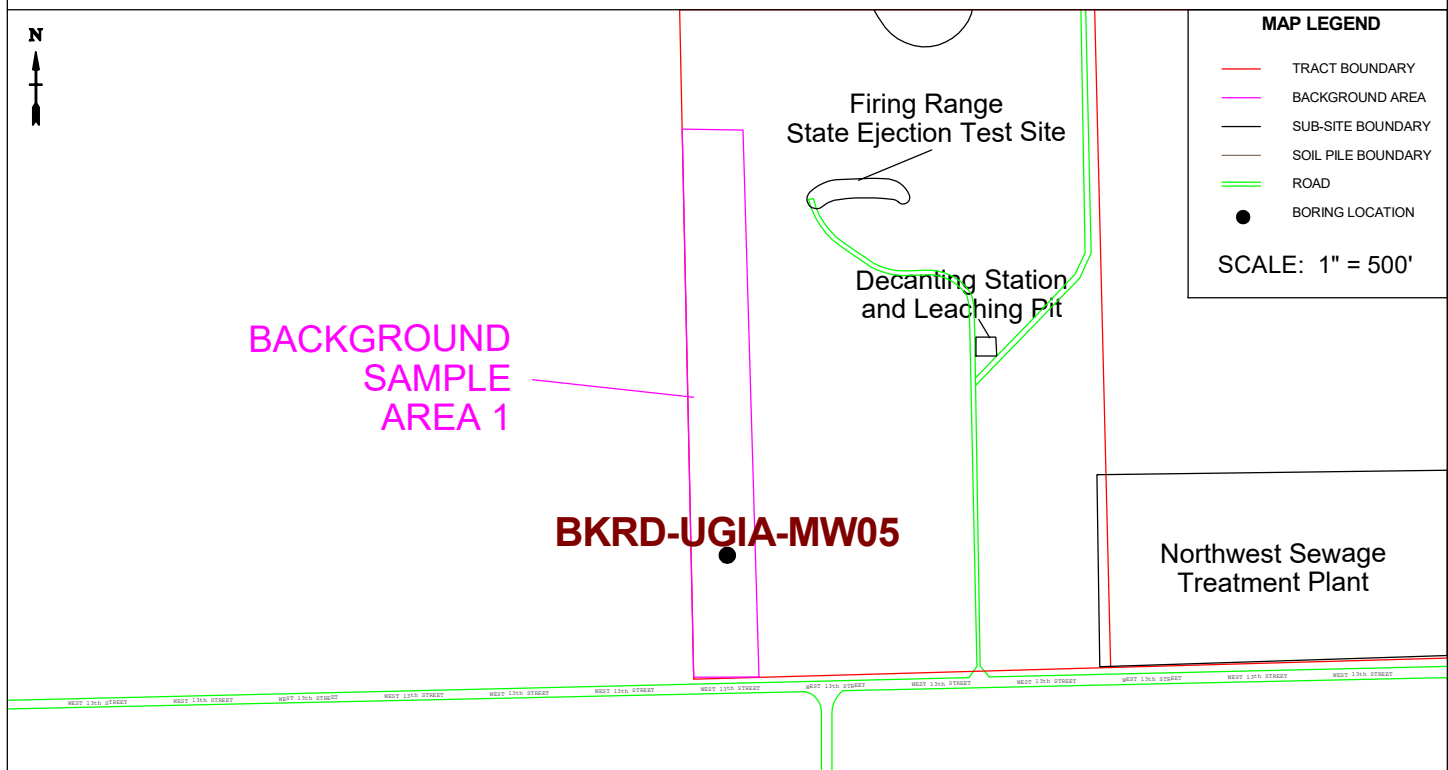
PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW04

| | | | | | |
|--|-------------------|--|---------------------------------------|-------------------------------|----------------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
BKRD-UGIA-MW05 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
M. Wold | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
403830.5 North 2048106.6 East | | | |
| | | 9. SURFACE ELEVATION
1910.5' MSL | | | |
| | | 10. DATE STARTED
5/2/2018 | 11. DATE COMPLETED
5/2/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
14 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
11.67 ft on 5/3/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
22.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
11.55 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | | 21. TOTAL CORE RECOVERY
N/A % |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW05

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1910.5 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1909.5 | 1 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (5Y 5/2) | | | | | |
| 1908.5 | 2 | | | | | | |
| 1907.5 | 3 | | | | | | |
| 1906.5 | 4 | | | | | | |
| 1905.5 | 5 | | | | | | |
| 1904.5 | 6 | | | | | | |
| 1903.5 | 7 | | | | | | |
| 1902.5 | 8 | | | | | | |
| 1901.5 | 9 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
8.5-10.5 ft.
100% Rec. | | 5 | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW05

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW05

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1901.5 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (5Y 5/2) (continued) | | | | 6 | |
| | | | | | | 5 | |
| 1900.5 | 10 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained mottles. (5GY 4/1) | | | | 9 | |
| | | | | | | 4 | |
| 1899.5 | 11 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
10.5-12.5 ft.
100% Rec. | | 6 | |
| | | | | | | 5 | |
| 1898.5 | 12 | | | | | 6 | |
| | | | | | | 3 | |
| 1897.5 | 13 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
12.5-14.5 ft.
100% Rec. | | 3 | |
| | | | | | | 4 | |
| 1896.5 | 14 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | 5 | |
| | | | | | | | |
| 1895.5 | 15 | | | | | | |
| | | | | | | | |
| 1894.5 | 16 | | | | | | |
| | | | | | | | |
| 1893.5 | 17 | | | | | | |
| | | | | | | | |
| 1892.5 | 18 | | | | | | |
| | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW05

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW05

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | | SHEET 4 OF 4 SHEETS | |
|--------------|--------------|--|--|---|---------------------------------|-------------------|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1892.5 | 18 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
18.5-20.5 ft.
100% Rec. | | 4 | | | |
| 1891.5 | 19 | | | | | 5 | | | |
| | | | | | | 6 | | | |
| 1890.5 | 20 | | | | | 6 | | | |
| | | | | | | | | | |
| 1889.5 | 21 | | | | | | | | |
| | | | | | | | | | |
| 1888.5 | 22 | | | | | | | | |
| | | | | | | | | | |
| 1887.5 | 23 | Bottom of Borehole @ 22.5 ft
10 Gallons of Water Lost During Drilling
Heaving Sands 14-22 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | |
| | | | | | | | | | |
| 1886.5 | 24 | | | | | | | | |
| | | | | | | | | | |
| 1885.5 | 25 | | | | | | | | |
| | | | | | | | | | |
| 1884.5 | 26 | | | | | | | | |
| | | | | | | | | | |
| 1883.5 | 27 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW05

| HTRW DRILLING LOG | | | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
BKRD-UGIA-MW06 | |
|--|--|----------------------------------|--|---|--|---------------------------------------|-----------------|
| 1. COMPANY NAME
ATI / HGL | | | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 |
| 3. PROJECT
CHAAP | | | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | | | 8. HOLE LOCATION
407945.1 North 2048501.4 East | | | |
| | | | | 9. SURFACE ELEVATION
1903.1' MSL | | | |
| | | | | 10. DATE STARTED
3/26/2018 | | 11. DATE COMPLETED
3/26/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
13 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
9.03 ft 18 Hrs Post-Install | | | |
| 14. TOTAL DEPTH OF HOLE
21.7 Feet Below the Ground Surface | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
9.03 (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | | DISTURBED
N/A | | UNDISTURBED
N/A | | 19. TOTAL NUMBER OF CORE BOXES
--- | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | | VOC
NA | | METALS
NA | | OTHER (SPECIFY)
NA | |
| | | OTHER (SPECIFY)
NA | | OTHER (SPECIFY)
NA | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | | BACKFILLED
N/A | | MONITORING WELL
YES | | 23. SIGNATURE OF INSPECTOR | |
| | | OTHER (SPECIFY)
Well Borehole | | | | | |
| <div style="font-weight: bold; margin-bottom: 10px;">LOCATION SKETCH/COMMENTS</div> <div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> </div> <div style="width: 75%;"> </div> <div style="width: 20%;"> <div style="border: 1px solid black; padding: 5px; font-size: 8pt; font-weight: bold;">MAP LEGEND</div> <ul style="list-style-type: none"> — TRACT BOUNDARY — BACKGROUND AREA — SUB-SITE BOUNDARY — SOIL PILE BOUNDARY — ROAD ● BORING LOCATION <div style="border: 1px solid black; padding: 5px; font-size: 8pt; margin-top: 5px;">SCALE: 1" = 500'</div> </div> </div> | | | | | | | |
| PROJECT CHAAP Grand Island, Nebraska | | | | | | HOLE NO BKRD-UGIA-MW06 | |


HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW06

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|---|--|---------------------------------|-------------------|---|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | | | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| 1903.1 | 0 | See BKRD-SS/SB14 Boring Log | | HA
0-5 ft. | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery | | | |
| 1902.1 | 1 | | | | | | | | | | |
| 1901.1 | 2 | | | | | | | | | | |
| 1900.1 | 3 | | | | | | | | | | |
| 1899.1 | 4 | | | | | | | | | | |
| 1898.1 | 5 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | |  | | | | | | | |
| 1897.1 | 6 | | | | | | | | | | |
| 1896.1 | 7 | | | | | | | | | | |
| 1895.1 | 8 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | *See Next Page | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
8.5-10.5 ft.
100% Rec. | | | WH | | | | |
| 1894.1 | 9 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW06

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW06

| PROJECT | CHAAP, Grand Island, Nebraska | DISTRICT | US Army Corps of Engineers - Omaha District | | | | SHEET 3 OF 4 SHEETS |
|--------------|-------------------------------|---|---|--|---------------------------------|-------------------|---------------------|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1894.1 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | 1 | |
| 1893.1 | 10 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy. (5Y 4/1) | | | | 2 | |
| 1892.1 | 11 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy. (5Y 4/1) | | | | 2 | |
| 1891.1 | 12 | | | | | | |
| 1890.1 | 13 | | | | | | |
| 1889.1 | 14 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
13.5-15.5 ft.
100% Rec. | | 9 | |
| 1888.1 | 15 | | | | | 11 | |
| | | | | | | 18 | |
| | | | | | | 22 | |
| 1887.1 | 16 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | |
| 1886.1 | 17 | | | | | | |
| 1885.1 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW06

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW06

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 4 | | | | 4 | | 4 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1885.1 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | | | |
| 1884.1 | 19 | | | | | | | | | | |
| 1883.1 | 20 | | | | | | | | | | |
| 1882.1 | 21 | | | | | | | | | | |
| 1881.1 | 22 | Bottom of Borehole @ 21.7 ft
10 Gallons of Water Lost During Drilling
Heaving Sands13.5-21.7 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | | | |
| 1880.1 | 23 | | | | | | | | | | |
| 1879.1 | 24 | | | | | | | | | | |
| 1878.1 | 25 | | | | | | | | | | |
| 1877.1 | 26 | | | | | | | | | | |
| 1876.1 | 27 | | | | | | | | | | |

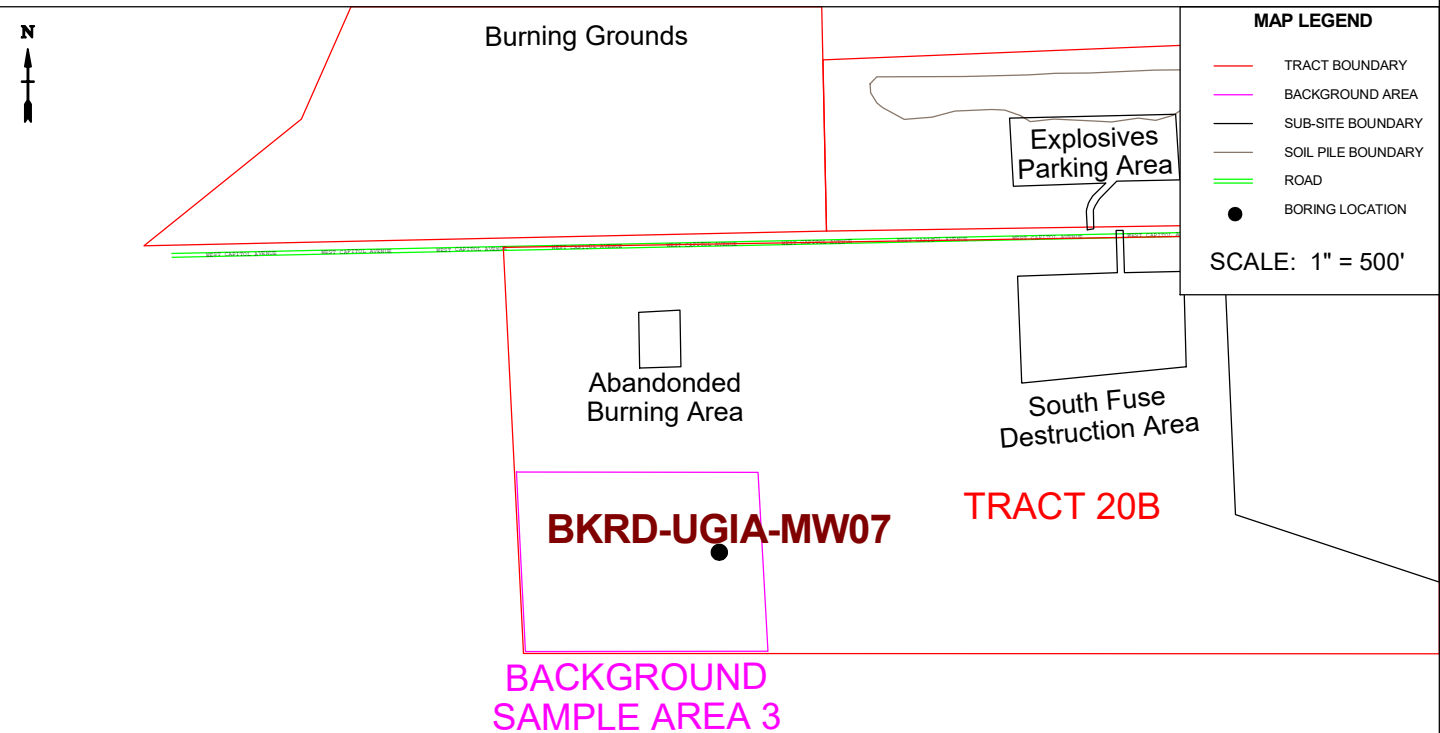
PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW06

| | | | | | |
|--|-------------------|---|---------------------------------------|-------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
BKRD-UGIA-MW07 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET 1 OF 4 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
408003.9 North 2048866.9 East | | | |
| | | 9. SURFACE ELEVATION
1903.1' MSL | | | |
| | | 10. DATE STARTED
3/27/2018 | 11. DATE COMPLETED
3/27/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
13.7 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
6.62 ft 20 Hrs Post-Install | | | |
| 14. TOTAL DEPTH OF HOLE
21.7 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
6.62 (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS




HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW07

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|---|--|---------------------------------|-------------------|---|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | | | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| 1903.1 | 0 | See BKRD-SS/SB16 Boring Log | | HA
0-5 ft. | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery | | | |
| 1902.1 | 1 | | | | | | | | | | |
| 1901.1 | 2 | | | | | | | | | | |
| 1900.1 | 3 | | | | | | | | | | |
| 1899.1 | 4 | | | | | | | | | | |
| 1898.1 | 5 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | |  | | | | | | | |
| 1897.1 | 6 | | | | | | | | | | |
| 1896.1 | 7 | | | | | | | | | | |
| 1895.1 | 8 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | *See Next Page | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
8.5-10.5 ft.
100% Rec. | | | WH | | | | |
| 1894.1 | 9 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW07

HTRW DRILLING LOG

S. Cameron

HOLE NUMBER
BKRD-UGIA-MW07

| | |
|----------|---|
| DISTRICT | US Army Corps of Engineers - Omaha District |
|----------|---|

SHEET 3 OF 4 SHEETS

| | | | |
|---------|------------------------------|---------|----------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | BKRD-UGIA-MW07 |
|---------|------------------------------|---------|----------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


BKRD-UGIA-MW07

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 4 | | | | 4 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1885.1 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | | | |
| 1884.1 | 19 | | | | | | | | | | |
| 1883.1 | 20 | | | | | | | | | | |
| 1882.1 | 21 | | | | | | | | | | |
| 1881.1 | 22 | Bottom of Borehole @ 21.7 ft
10 Gallons of Water Lost During Drilling
Heaving Sands13.7-21.7 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | | | |
| 1880.1 | 23 | | | | | | | | | | |
| 1879.1 | 24 | | | | | | | | | | |
| 1878.1 | 25 | | | | | | | | | | |
| 1877.1 | 26 | | | | | | | | | | |
| 1876.1 | 27 | | | | | | | | | | |

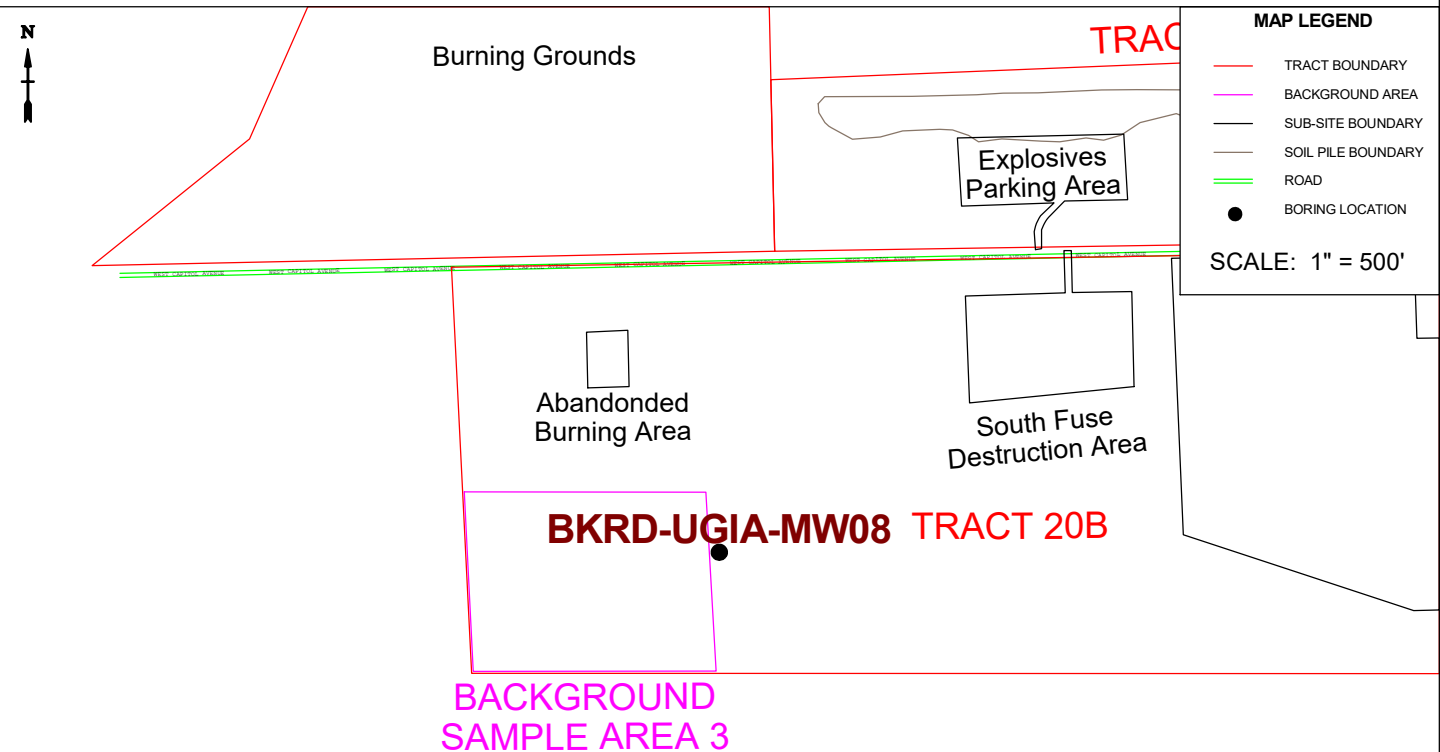
PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW07

| | | | | | |
|--|-------------------|---|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
BKRD-UGIA-MW08 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
408055.8 North 2049002.4 East | | | |
| | | 9. SURFACE ELEVATION
1902.2' MSL | | | |
| | | 10. DATE STARTED
3/28/2018 | 11. DATE COMPLETED
3/28/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
12.4 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
6.34 ft on 4/1/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
20.7 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW08

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1902.2 | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | HA
0-4 ft. | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1901.2 | 1 | | | | | | |
| 1900.2 | 2 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1899.2 | 3 | | | | | | |
| 1898.2 | 4 | | | | | | |
| 1897.2 | 5 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1896.2 | 6 | | | | | | |
| 1895.2 | 7 | | | | | | |
| 1894.2 | 8 | | | | | | |
| 1893.2 | 9 | *See Next Page | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
8.5-10.5 ft.
100% Rec. | | WH | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

BKRD-UGIA-MW08

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW08

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1893.2 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | 1 | |
| | | | | | | 2 | |
| 1892.2 | 10 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, iron-stained coarse-sand sized clasts (2%), no dilatancy. (5Y 4/1) | | | | 2 | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
10.5-12.5 ft.
100% Rec. | | 3 | |
| 1891.2 | 11 | | | | | 5 | |
| | | | | | | 5 | |
| 1890.2 | 12 | | | | | 7 | |
| | | | | | | | |
| 1889.2 | 13 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | |
| | | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | |
| 1888.2 | 14 | | | | | | |
| | | | | | | | |
| 1887.2 | 15 | | | | | | |
| | | | | | | | |
| 1886.2 | 16 | | | | | | |
| | | | | | | | |
| 1885.2 | 17 | | | | | | |
| | | | | | | | |
| 1884.2 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

BKRD-UGIA-MW08

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW08

| PROJECT | | DISTRICT | | SHEET | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 4 | | | 4 | | 4 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| 1884.2 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | | |
| 1883.2 | 19 | | | | | | | | | |
| 1882.2 | 20 | | | | | | | | | |
| 1881.2 | 21 | Bottom of Borehole @ 20.7 ft
10 Gallons of Water Lost During Drilling
Heaving Sands12.7-20.7 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | | |
| 1880.2 | 22 | | | | | | | | | |
| 1879.2 | 23 | | | | | | | | | |
| 1878.2 | 24 | | | | | | | | | |
| 1877.2 | 25 | | | | | | | | | |
| 1876.2 | 26 | | | | | | | | | |
| 1875.2 | 27 | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW08

| HTRW DRILLING LOG | | | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
BKRD-UGIA-MW09 | |
|--|--|-----------------------|--|---|--|---------------------------------------|-----------------|
| 1. COMPANY NAME
ATI / HGL | | | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 |
| 3. PROJECT
CHAAP | | | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | | | 8. HOLE LOCATION
407761.3 North 2048523.6 East | | | |
| | | | | 9. SURFACE ELEVATION
1903.5' MSL | | | |
| | | | | 10. DATE STARTED
3/29/2018 | | 11. DATE COMPLETED
3/29/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
11.5 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
6.91 ft on 4/3/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
20.7 Feet Below the Ground Surface | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | | DISTURBED
N/A | | UNDISTURBED
N/A | | 19. TOTAL NUMBER OF CORE BOXES
--- | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | | VOC
NA | | METALS
NA | | OTHER (SPECIFY)
NA | |
| | | OTHER (SPECIFY)
NA | | OTHER (SPECIFY)
NA | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | | BACKFILLED
N/A | | MONITORING WELL
YES | | 23. SIGNATURE OF INSPECTOR
 | |
| <div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>LOCATION SKETCH/COMMENTS</p> </div> <div style="width: 35%; border: 1px solid black; padding: 5px; font-size: 8pt;"> <p>MAP LEGEND</p> <ul style="list-style-type: none"> — TRACT BOUNDARY — BACKGROUND AREA — SUB-SITE BOUNDARY — SOIL PILE BOUNDARY — ROAD ● BORING LOCATION <p>SCALE: 1" = 500'</p> </div> </div> | | | | | | | |
| PROJECT CHAAP Grand Island, Nebraska | | | | | | HOLE NO BKRD-UGIA-MW09 | |

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW09

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1903.5 | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | HA
0-4 ft. | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1902.5 | 1 | | | | | | |
| 1901.5 | 2 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1900.5 | 3 | | | | | | |
| 1899.5 | 4 | | | | | | |
| 1898.5 | 5 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1897.5 | 6 | | | | | | |
| 1896.5 | 7 | | | | | | |
| 1895.5 | 8 | | | | | | |
| 1894.5 | 9 | *See Next Page | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
8.5-10.5 ft.
100% Rec. | | WH | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

BKRD-UGIA-MW09

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW09

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | | SHEET 3 OF 4 SHEETS | |
|--------------|--------------|---|--|---|---------------------------------|-------------------|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1894.5 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | 2 | | | |
| | | | | | | 1 | | | |
| 1893.5 | 10 | | | | | 2 | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
10.5-12.5 ft.
100% Rec. | | 2 | | | |
| 1892.5 | 11 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy. (5Y 4/1) | | | | 3 | | | |
| | | | | | | 4 | | | |
| 1891.5 | 12 | | | | | 8 | | | |
| | | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | | |
| 1890.5 | 13 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | | |
| | | | | | | | | | |
| 1889.5 | 14 | | | | | | | | |
| | | | | | | | | | |
| 1888.5 | 15 | | | | | | | | |
| | | | | | | | | | |
| 1887.5 | 16 | | | | | | | | |
| | | | | | | | | | |
| 1886.5 | 17 | | | | | | | | |
| | | | | | | | | | |
| 1885.5 | 18 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW09

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


BKRD-UGIA-MW09

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 4 OF 4 SHEETS | |
|--------------|--------------|---|--|-----------------------------------|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1885.5 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | |
| 1884.5 | 19 | | | | | | | | |
| 1883.5 | 20 | | | | | | | | |
| 1882.5 | 21 | Bottom of Borehole @ 20.7 ft
10 Gallons of Water Lost During Drilling
Heaving Sands12.3-20.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | |
| 1881.5 | 22 | | | | | | | | |
| 1880.5 | 23 | | | | | | | | |
| 1879.5 | 24 | | | | | | | | |
| 1878.5 | 25 | | | | | | | | |
| 1877.5 | 26 | | | | | | | | |
| 1876.5 | 27 | | | | | | | | |

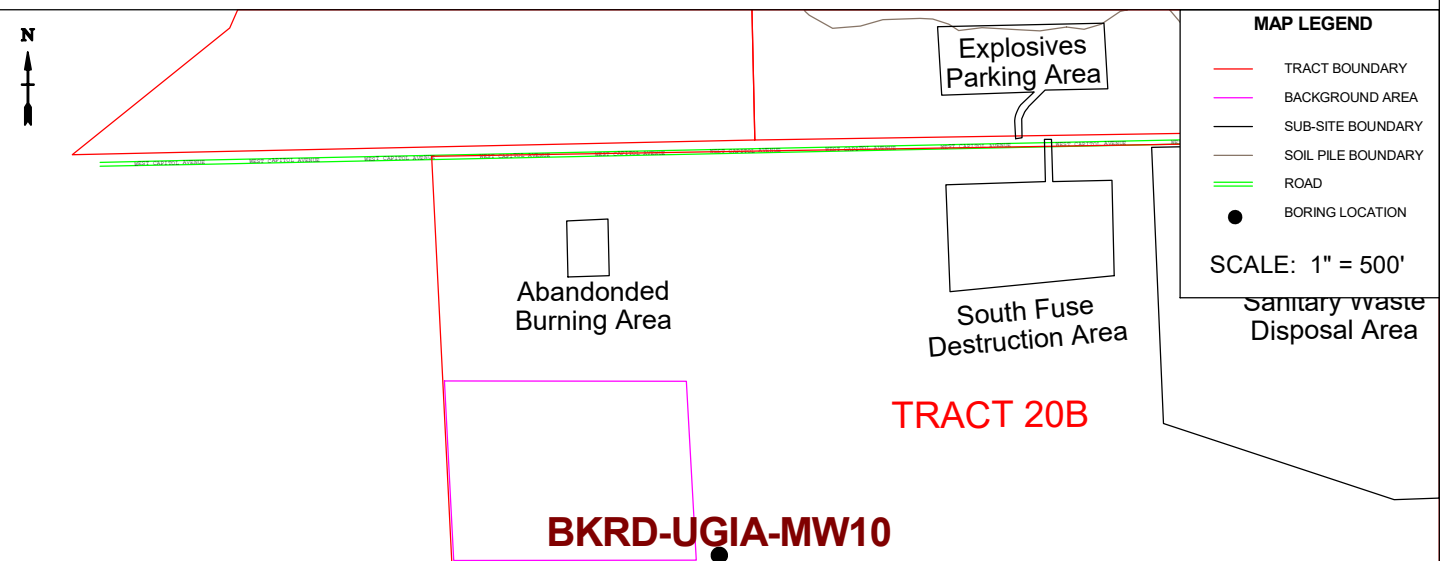
PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW09

| | | | | | |
|--|-------------------|---|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
BKRD-UGIA-MW10 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET 1 OF 4 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
407758.7 North 2049053.8 East | | | |
| | | 9. SURFACE ELEVATION
1903.1' MSL | | | |
| | | 10. DATE STARTED
3/28/2018 | | 11. DATE COMPLETED
3/28/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
12.5 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
7.36 ft on 4/1/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
20.7 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS




HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW10

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 2 OF 4 SHEETS | |
|--------------|--------------|---|--|--|---|---|---------------------------------|---------------------|---|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1903.1 | 0 | See BKRD-SS/SB20 Boring Log | | | HA
0-5 ft. | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery |
| 1902.1 | 1 | | | | | | | | |
| 1901.1 | 2 | | | | | | | | |
| 1900.1 | 3 | | | | | | | | |
| 1899.1 | 4 | | | | | | | | |
| 1898.1 | 5 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | |  | | | | |
| 1897.1 | 6 | | | | | | | | |
| 1896.1 | 7 | | | | | | | | |
| 1895.1 | 8 | | | | | | | | |
| | | | | | | | | | |
| | | *See Next Page | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
8.5-10.5 ft.
100% Rec. | | | WH | |
| 1894.1 | 9 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW10

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-UGIA-MW10

| PROJECT | | DISTRICT | | ANALYTICAL | | | | SHEET | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|----------------|-------|--|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | | 3 | | 4 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | | | |
| 1894.1 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | 1 | | | | | | | |
| | | | | | | 2 | | | | | | | |
| 1893.1 | 10 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, iron-stained coarse-sand sized clasts (2%), no dilatancy. (5Y 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
10.5-12.5 ft.
100% Rec. | | 2 | | | | | | | |
| | | | | | | 3 | | | | | | | |
| 1892.1 | 11 | | | | | 5 | | | | | | | |
| | | | | | | 5 | | | | | | | |
| 1891.1 | 12 | | | | | 7 | | | | | | | |
| | | | | | | | | | | | | | |
| 1890.1 | 13 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
12.5-14.5 ft.
100% Rec. | | 5 | | | | | | | |
| | | | | | | 11 | | | | | | | |
| 1889.1 | 14 | | | | | 15 | | | | | | | |
| | | | | | | 18 | | | | | | | |
| 1888.1 | 15 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 1887.1 | 16 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 1886.1 | 17 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 1885.1 | 18 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW10

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


BKRD-UGIA-MW10

| PROJECT | | DISTRICT | | SHEET | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 4 | | | 4 | | 4 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| 1885.1 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | | |
| 1884.1 | 19 | | | | | | | | | |
| 1883.1 | 20 | | | | | | | | | |
| 1882.1 | 21 | Bottom of Borehole @ 20.7 ft
10 Gallons of Water Lost During Drilling
Heaving Sands12.5-20.7 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | | |
| 1881.1 | 22 | | | | | | | | | |
| 1880.1 | 23 | | | | | | | | | |
| 1879.1 | 24 | | | | | | | | | |
| 1878.1 | 25 | | | | | | | | | |
| 1877.1 | 26 | | | | | | | | | |
| 1876.1 | 27 | | | | | | | | | |

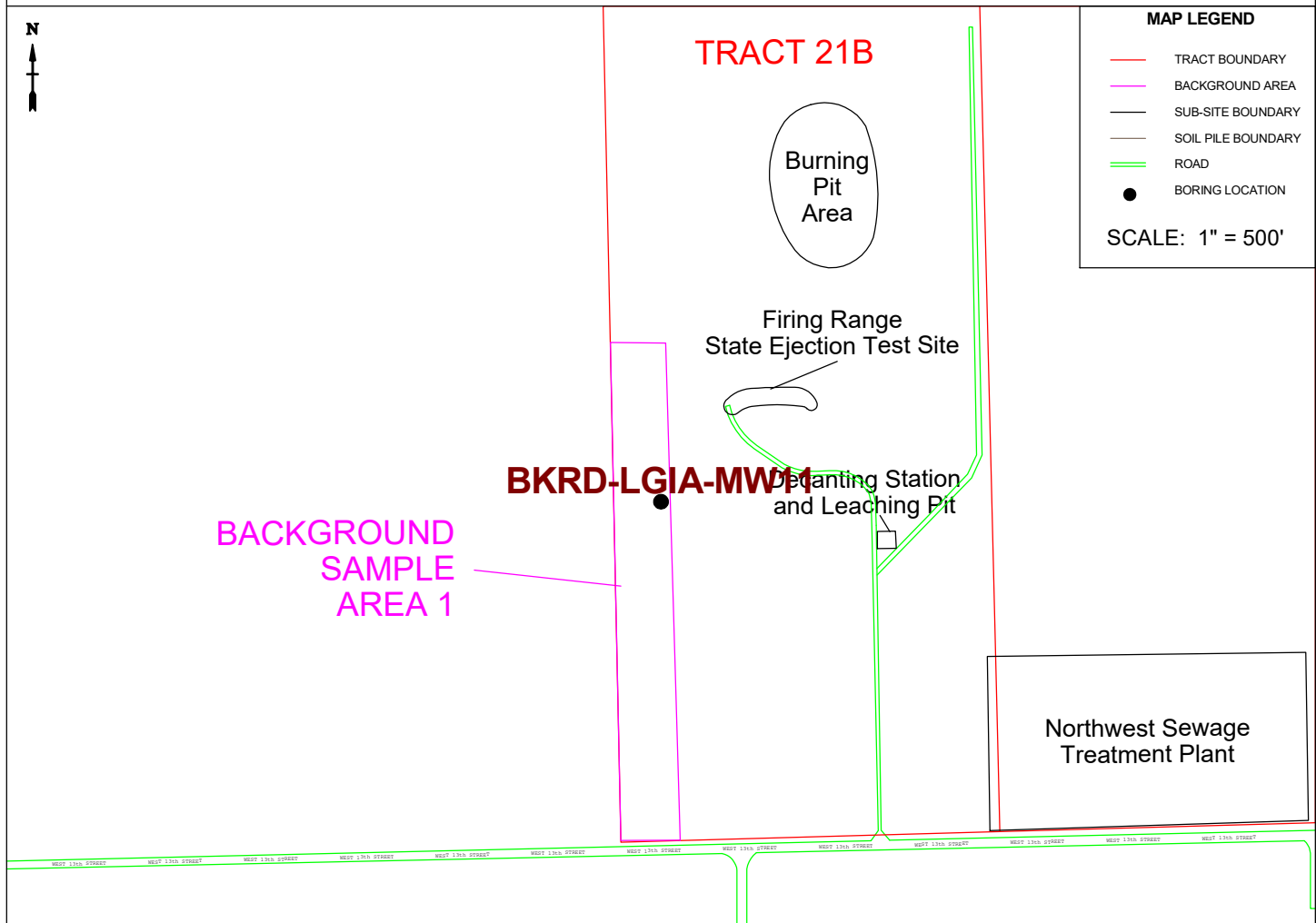
PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-UGIA-MW10

| | | | | | |
|--|-------------------|--|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
BKRD-LGIA-MW11 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 7 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
M. Wold | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
404483.7 North 2048134.0 East | | | |
| | | 9. SURFACE ELEVATION
1916.5' MSL | | | |
| | | 10. DATE STARTED
5/5/2018 | | 11. DATE COMPLETED
5/5/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
21 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
18.03 ft on 5/6/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
50.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
18.09 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW11

| PROJECT | | DISTRICT | | ANALYTICAL | | | SHEET | |
|-------------------------------|--------------|--|--|--|-------------------|-------------------|---|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | 2 OF 7 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1916.5 | 0 | Overburden: Intermingled 5Y 5/2 SILTY CLAY, Dark Brown TOPSOIL, and 2.5Y 5/2 SILTY CLAY. Hard and dense, dry.. (5Y 5/2) | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery | |
| 1915.5 | 1 | | | | | | | |
| 1914.5 | 2 | | | | | | | |
| 1913.5 | 3 | | | | | | | |
| 1912.5 | 4 | | | | | | | |
| 1911.5 | 5 | | | | | | | |
| 1910.5 | 6 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained mottling. (5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
7-9 ft.
20% Rec. | | 7 | | |
| 1909.5 | 7 | | | | | 9 | | |
| 1908.5 | 8 | | | | | 9 | | |
| 1907.5 | 9 | | | | | 11 | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW11

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW11

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
|--------------|--------------|--|-----------------------------------|--|---------------------------------|-------------------|----------------|--|--------------------------------|--|---|
| 1907.5 | 9 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained mottling. (5Y 5/2) (continued) | | | | | | | | | |
| 1906.5 | 10 | | | | | | | | | | |
| 1905.5 | 11 | | | | | | | | | | |
| 1904.5 | 12 | | | | | | | | | | |
| 1903.5 | 13 | | | | | | | | | | |
| 1902.5 | 14 | | | | | | | | | | |
| 1901.5 | 15 | | | | | | | | | | |
| 1900.5 | 16 | | | | | | | | | | |
| 1899.5 | 17 | | | | | | | | | | |
| 1898.5 | 18 | | | | | | | | | | |
| | | | | | | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
17-19 ft.
100% Rec. | | 3 |
| | | | | | | | | | | | 5 |

HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppmSS 2
17-19 ft.
100% Rec.

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW11

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW11

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 4 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1898.5 | 18 | | | | | 5 | |
| | | | | | | 6 | |
| 1897.5 | 19 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained mottling. (2.5Y 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
19-21 ft.
100% Rec. | | 3 | |
| | | | | | | 2 | |
| 1896.5 | 20 | | | | | 3 | |
| | | | | | | 5 | |
| 1895.5 | 21 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | | |
| 1894.5 | 22 | | | | | | |
| | | | | | | | |
| 1893.5 | 23 | | | | | | |
| | | | | | | | |
| 1892.5 | 24 | | | | | | |
| | | | | | | | |
| 1891.5 | 25 | | | | | | |
| | | | | | | | |
| 1890.5 | 26 | | | | | | |
| | | | | | | | |
| 1889.5 | 27 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

BKRD-LGIA-MW11

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW11

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | | SHEET 5 OF 7 SHEETS | |
|--------------|--------------|---|--|---|------------------------------------|-------------------|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1889.5 | 27 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | | | | | | |
| 1888.5 | 28 | | | | | | | | |
| 1887.5 | 29 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
28.5-30.5 ft.
100% Rec. | | 2 | | | |
| | | | | | | 3 | | | |
| | | | | | | 3 | | | |
| 1886.5 | 30 | | | | | 3 | | | |
| | | | | | | | | | |
| 1885.5 | 31 | | | | | | | | |
| | | | | | | | | | |
| 1884.5 | 32 | | | | | | | | |
| | | | | | | | | | |
| 1883.5 | 33 | | | | | | | | |
| | | | | | | | | | |
| 1882.5 | 34 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
33.5-35.5 ft.
100% Rec. | | 3 | | |
| | | | | | | | 5 | | |
| | | | | | | | 5 | | |
| 1881.5 | 35 | | | | | 5 | | | |
| | | | | | | | | | |
| 1880.5 | 36 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW11

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW11

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 6 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1880.5 | 36 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | |
| 1879.5 | 37 | | | | | | |
| 1878.5 | 38 | | | | | | |
| 1877.5 | 39 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
38.5-40.5 ft.
100% Rec. | | 4 | |
| 1876.5 | 40 | | | | | 4
5
5 | |
| 1875.5 | 41 | | | | | | |
| 1874.5 | 42 | | | | | | |
| 1873.5 | 43 | | | | | | |
| 1872.5 | 44 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 7
43.5-45.5 ft.
100% Rec. | | 3
5
6 | |
| 1871.5 | 45 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW11

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW11

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 7 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1871.5 | 45 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | 6 | |
| 1870.5 | 46 | | | | | | |
| 1869.5 | 47 | | | | | | |
| 1868.5 | 48 | | | | | | |
| 1867.5 | 49 | (CL) LEAN CLAY (90%): Low plasticity, low
toughness, medium dry strength, no dilatancy,
slightly moist, fine sand (10%). (5Y 5/3) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 8
48.5-50.5 ft.
100% Rec. | | 4 | |
| | | | | | | 6 | |
| | | | | | | 11 | |
| 1866.5 | 50 | | | | | 14 | |
| 1865.5 | 51 | Bottom of Borehole @ 50.5 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 21-48.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | |
| 1864.5 | 52 | | | | | | |
| 1863.5 | 53 | | | | | | |
| 1862.5 | 54 | | | | | | |

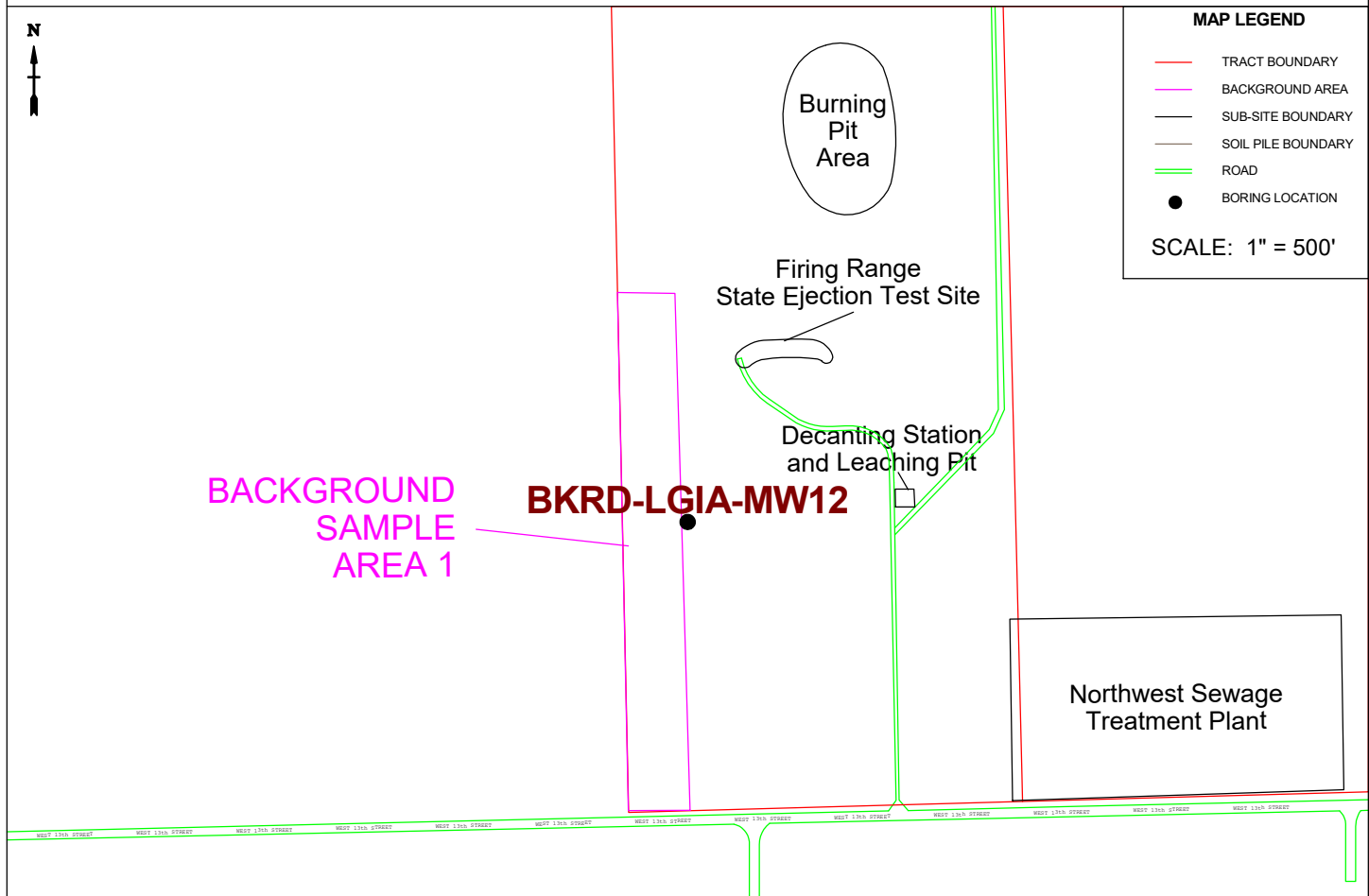
PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW11

| | | | | | |
|--|-------------------|--|---------------------------------------|----------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
BKRD-LGIA-MW12 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 7 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
M. Wold | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
404308.0 North 2048182.1 East | | | |
| | | 9. SURFACE ELEVATION
1913.8' MSL | | | |
| | | 10. DATE STARTED
5/5/2018 | | 11. DATE COMPLETED
5/5/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
19.5 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
15.38 ft on 5/6/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
45.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
15.28 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



| | |
|--|---------------------------|
| PROJECT CHAAP Grand Island, Nebraska | HOLE NO BKRD-LGIA-MW12 |
|--|---------------------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW12

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1913.8 | 0 | Overburden: Intermingled 5Y 5/2 SILTY CLAY,
Dark Brown TOPSOIL, and 2.5Y 5/2 SILTY
CLAY. Hard and dense, dry.. (5Y 5/2) | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1912.8 | 1 | | | | | | |
| 1911.8 | 2 | | | | | | |
| 1910.8 | 3 | | | | | | |
| 1909.8 | 4 | | | | | | |
| 1908.8 | 5 | | | | | | |
| 1907.8 | 6 | | | | | | |
| 1906.8 | 7 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
7-9 ft.
100% Rec. | | 4 | |
| | | | | | | 7 | |
| | | | | | | 9 | |
| 1905.8 | 8 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 7
8.5-10.5 ft.
100% Rec. | | 6 | 9 |
| | | | | | | | |
| 1904.8 | 9 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW12

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW12

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1904.8 | 9 | Overburden: Intermingled 5Y 5/2 SILTY CLAY, Dark Brown TOPSOIL, and 2.5Y 5/2 SILTY CLAY. Hard and dense, dry.. (5Y 5/2)
(continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
9-11 ft.
100% Rec. | | 6 8 | |
| | | | | | | 5 9 | |
| 1903.8 | 10 | | | | | 7 11 | |
| | | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained mottling. (5Y 5/2) | | | | 7 | |
| 1902.8 | 11 | | | | | | |
| | | | | | | | |
| 1901.8 | 12 | | | | | | |
| | | | | | | | |
| 1900.8 | 13 | | | | | | |
| | | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained mottling. (10y 3/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
13.5-15.5 ft.
100% Rec. | | 4 | |
| 1899.8 | 14 | | | | | 4 | |
| | | | | | | 6 | |
| 1898.8 | 15 | | | | | 7 | |
| | | | | | | | |
| 1897.8 | 16 | | | | | | |
| | | | | | | | |
| 1896.8 | 17 | | | | | | |
| | | | | | | | |
| 1895.8 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

BKRD-LGIA-MW12

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW12

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 4 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1895.8 | 18 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained mottling. (10y 3/1) (continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
18.5-20.5 ft.
100% Rec. | | 5 | |
| 1894.8 | 19 | | | | | 7 | |
| 1893.8 | 20 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | 11 | |
| | | | | | | 17 | |
| 1892.8 | 21 | | | | | | |
| | | | | | | | |
| 1891.8 | 22 | | | | | | |
| | | | | | | | |
| 1890.8 | 23 | | | | | | |
| | | | | | | | |
| 1889.8 | 24 | | | | | | |
| | | | | | | | |
| 1888.8 | 25 | | | | | | |
| | | | | | | | |
| 1887.8 | 26 | | | | | | |
| | | | | | | | |
| 1886.8 | 27 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

BKRD-LGIA-MW12

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW12

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 5 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1886.8 | 27 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1885.8 | 28 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1884.8 | 29 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1883.8 | 30 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1882.8 | 31 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1881.8 | 32 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1880.8 | 33 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1879.8 | 34 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
33.5-35.5 ft.
100% Rec. | | 4 | |
| | | | | | | 5 | |
| | | | | | | 6 | |
| | | | | | | | |
| | | | | | | | |
| 1878.8 | 35 | | | | | 6 | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1877.8 | 36 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW12

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW12

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 6 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1877.8 | 36 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | |
| 1876.8 | 37 | | | | | | |
| 1875.8 | 38 | | | | | | |
| 1874.8 | 39 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
38.5-40.5 ft.
100% Rec. | | 5 | |
| | | | | | | 5 | |
| | | | | | | 6 | |
| 1873.8 | 40 | | | | | 5 | |
| 1872.8 | 41 | (CL) LEAN CLAY (90%): Low plasticity, low
toughness, medium dry strength, no dilatancy,
slightly moist, fine sand (10%). (5Y 5/3) | | | | | |
| 1871.8 | 42 | | | | | | |
| 1870.8 | 43 | | | | | | |
| 1869.8 | 44 | | | | | | |
| 1868.8 | 45 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

BKRD-LGIA-MW12

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


BKRD-LGIA-MW12

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 7 | | | | 7 | | 7 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1868.8 | 45 | (CL) LEAN CLAY (90%): Low plasticity, low toughness, medium dry strength, no dilatancy, slightly moist, fine sand (10%). (5Y 5/3)
(continued) | | | | | | | | | |
| 1867.8 | 46 | Bottom of Borehole @ 45.5 ft
100 Gallons of Water Lost During Drilling
Heaving Sands19.5-41 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | | | | |
| 1866.8 | 47 | | | | | | | | | | |
| 1865.8 | 48 | | | | | | | | | | |
| 1864.8 | 49 | | | | | | | | | | |
| 1863.8 | 50 | | | | | | | | | | |
| 1862.8 | 51 | | | | | | | | | | |
| 1861.8 | 52 | | | | | | | | | | |
| 1860.8 | 53 | | | | | | | | | | |
| 1859.8 | 54 | | | | | | | | | | |

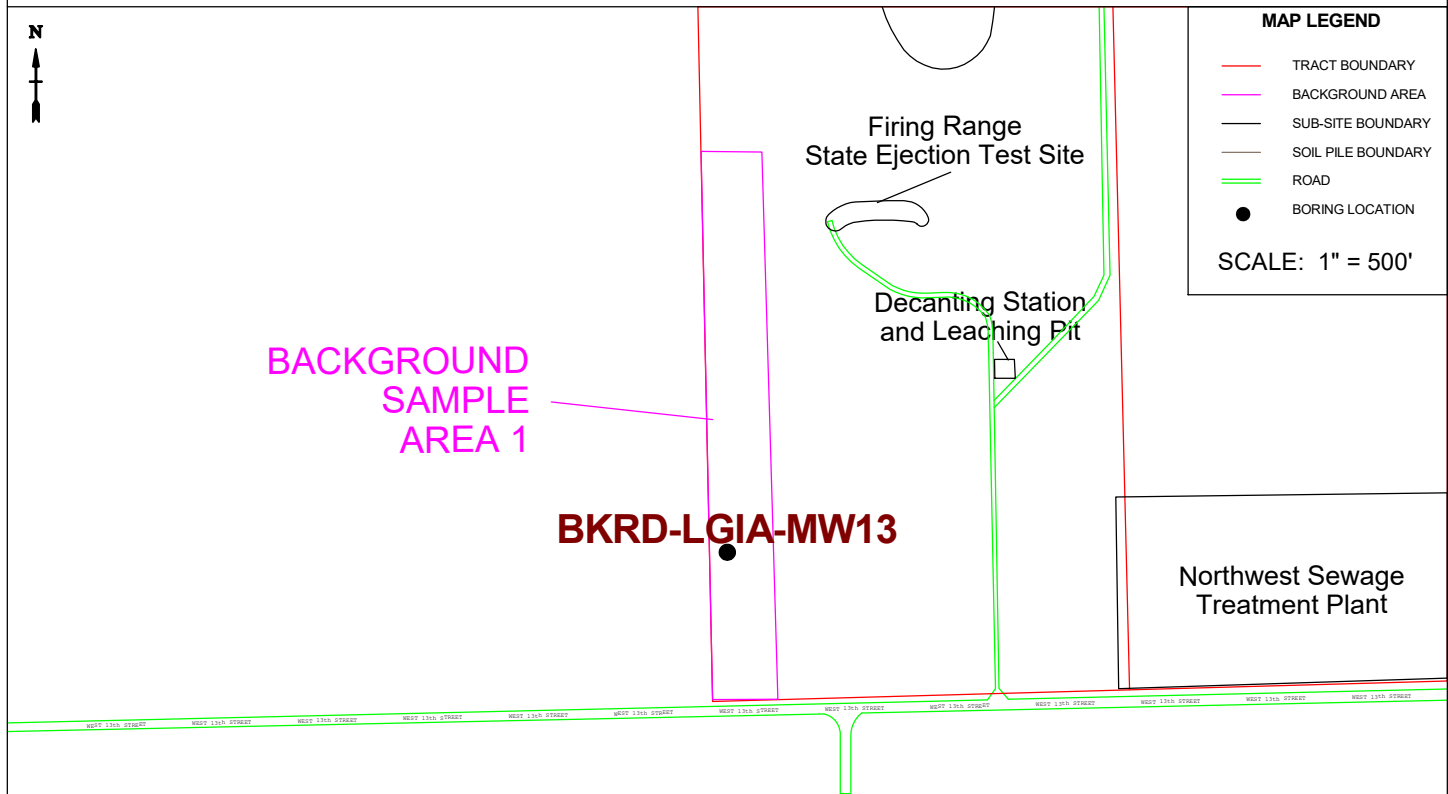
PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW12

| | | | | | |
|--|-------------------|--|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
BKRD-LGIA-MW13 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 7 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
403896.2 North 2048057.7 East | | | |
| | | 9. SURFACE ELEVATION
1918.4' MSL | | | |
| | | 10. DATE STARTED
5/6/2018 | | 11. DATE COMPLETED
5/6/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
23 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
19.61 ft on 5/8/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
52.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
19.89 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW13

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|--|
| 1918.4 | 0 | Overburden: Intermingled 5Y 5/2 SILTY CLAY,
Dark Brown TOPSOIL, and 2.5Y 5/2 SILTY
CLAY. Hard and dense, dry.. (5Y 5/2) | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1917.4 | 1 | | | | | | |
| 1916.4 | 2 | | | | | | |
| 1915.4 | 3 | | | | | | |
| 1914.4 | 4 | | | | | | |
| 1913.4 | 5 | | | | | | |
| 1912.4 | 6 | | | | | | |
| 1911.4 | 7 | | | | | | |
| 1910.4 | 8 | | | | | | |
| 1909.4 | 9 | | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

BKRD-LGIA-MW13

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW13

| PROJECT | | DISTRICT | | ANALYTICAL | | | SHEET | |
|-------------------------------|--------------|--|--|--|--|-------------------|----------------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | SAMPLE NO. | | | 3 OF 7 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | | BLOW COUNT
(g) | REMARKS
(h) | |
| 1909.4 | 9 | (CL) LEAN CLAY (90%) (POSSIBLY FILL):
Low plasticity, moist, high dry strength,
medium toughness, 10% fine sand, no
dilatancy, iron-stained mottling, trace wood
fragments. (5Y 5/2) | | | | | | |
| 1908.4 | 10 | | | | | | | |
| 1907.4 | 11 | | | | | | | |
| 1906.4 | 12 | | | | | | | |
| 1905.4 | 13 | | | | | | | |
| 1904.4 | 14 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
13.5-15.5 ft.
100% Rec. | | 6 | | |
| | | | | | | 6 | | |
| | | | | | | 7 | | |
| 1903.4 | 15 | | | | | 9 | | |
| 1902.4 | 16 | | | | | | | |
| 1901.4 | 17 | | | | | | | |
| 1900.4 | 18 | | | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

BKRD-LGIA-MW13

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW13

| PROJECT | CHAAP | Grand Island, Nebraska | DISTRICT | US Army Corps of Engineers - Omaha District | | | SHEET | 4 | OF | 7 | SHEETS |
|--------------|--------------|--|--|---|---------------------------------|-------------------|----------------|---|----|---|--------|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1900.4 | 18 | (CL) LEAN CLAY (90%) (POSSIBLY FILL):
Low plasticity, moist, high dry strength,
medium toughness, 10% fine sand, no
dilatancy, iron-stained mottling, trace wood
fragments. (5Y 5/2) (continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
18.5-20.5 ft.
100% Rec. | | | | | | | |
| 1899.4 | 19 | | | | | 4 | | | | | |
| | | (CL) LEAN CLAY (90%): Low to medium
plasticity, moist, high dry strength, medium
toughness, 10% fine sand, no dilatancy,
iron-stained mottling. (10y 3/1) | | | | 5 | | | | | |
| | | | | | | 7 | | | | | |
| 1898.4 | 20 | | | | | 7 | | | | | |
| | | (SW) WELL GRADED SILTY SAND (90%):
Poorly sorted, very fine grained, slightly
cohesive, moist, 10% fines. (10y 3/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
20.5-22.5 ft.
100% Rec. | | 1 | | | | | |
| 1897.4 | 21 | | | | | 3 | | | | | |
| | | | | | | 3 | | | | | |
| 1896.4 | 22 | | | | | 4 | | | | | |
| | | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
22.5-24.5 ft.
100% Rec. | | 3 | | | | | |
| 1895.4 | 23 | | | | | 3 | | | | | |
| | | | | | | 4 | | | | | |
| 1894.4 | 24 | | | | | 5 | | | | | |
| | | | | | | | | | | | |
| 1893.4 | 25 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1892.4 | 26 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1891.4 | 27 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW13

HTRW DRILLING LOG

S. Cameron

BKRD-LGIA-MW13

SHEET 5 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|-----------------------------------|--|---------------------------------|-------------------|----------------|
| 1891.4 | 27 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
<i>(continued)</i> | | | | | |
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| 1890.4 | 28 | | | | | | |
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| 1889.4 | 29 | | | | | | |
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| 1888.4 | 30 | | | | | | |
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| 1887.4 | 31 | | | | | | |
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| 1886.4 | 32 | | | | | | |
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| | | | | | | | |
| 1885.4 | 33 | | | | | | |
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| 1884.4 | 34 | | | | | | |
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| 1883.4 | 35 | | | | | | |
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| | | | | | | | |
| 1882.4 | 36 | | | | | | |

| | |
|---------|----------------|
| HOLE NO | BKRD-LGIA-MW13 |
|---------|----------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW13

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 6 | | | | 7 | | SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1882.4 | 36 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | | | | | | | | |
| 1881.4 | 37 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1880.4 | 38 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1879.4 | 39 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1878.4 | 40 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1877.4 | 41 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1876.4 | 42 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1875.4 | 43 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1874.4 | 44 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1873.4 | 45 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW13

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW13

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 7 OF 7 SHEETS | |
|--------------|--------------|---|--|--|--|---|-------------------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1873.4 | 45 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | | | | | | |
| 1872.4 | 46 | | | | | | | | |
| 1871.4 | 47 | | | | | | | | |
| 1870.4 | 48 | | | | | | | | |
| 1869.4 | 49 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
48.5-50.5 ft.
10% Rec. | | 11

9

9

8 | | |
| 1868.4 | 50 | | | | | | | | |
| 1867.4 | 51 | | | | | | | | |
| 1866.4 | 52 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
52-54 ft.
100% Rec. | | 8 | | |
| | | (CL) LEAN CLAY (90%): Low plasticity, low toughness, medium dry strength, no dilatancy, slightly moist, fine sand (10%). (5GY 4/1) | | | | | | | |
| 1865.4 | 53 | Bottom of Borehole @ 52.5 ft
100 Gallons of Water Lost During Drilling
Heaving Sands23-52.3 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | 14

17

23 | | |
| 1864.4 | 54 | | | | | | | | |

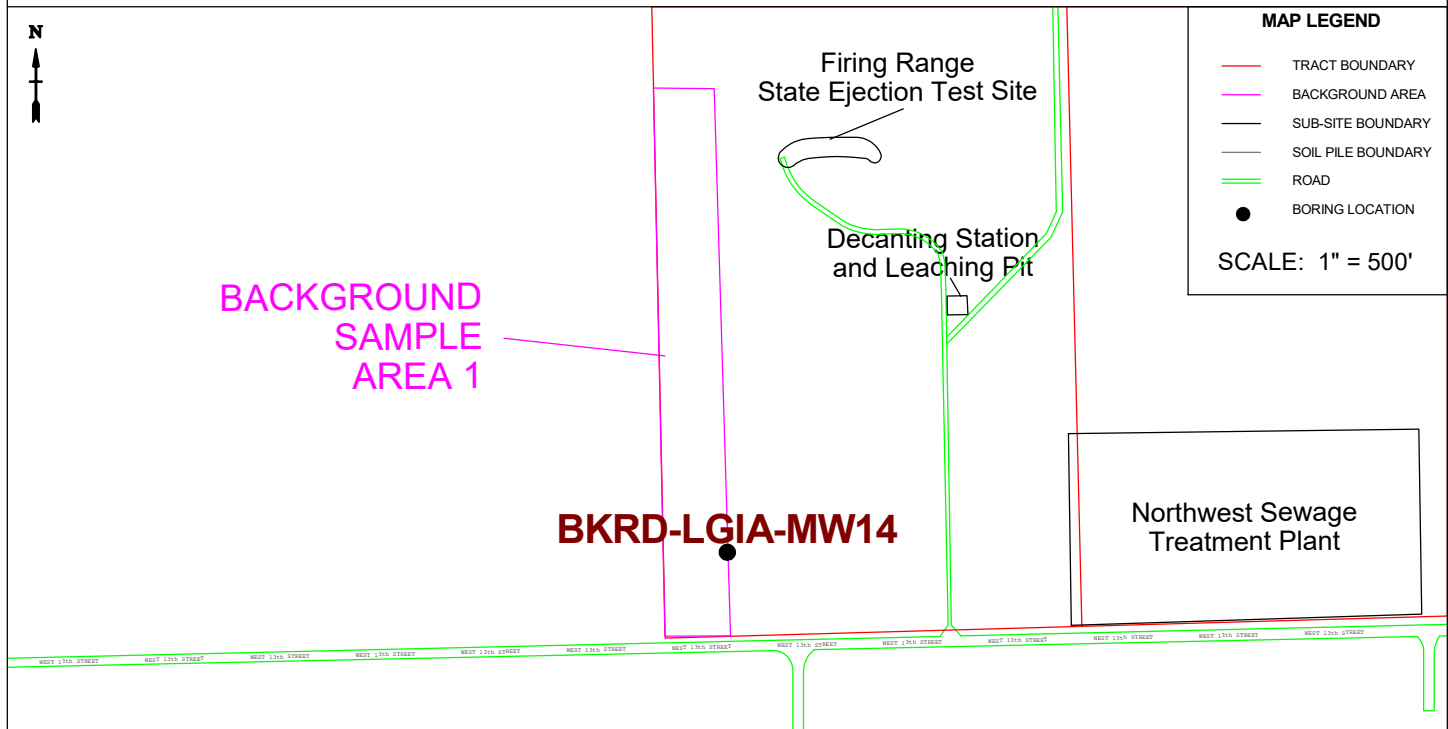
PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW13

| | | | | | |
|--|-------------------|--|---------------------------------------|--------------------------------|----------------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
BKRD-LGIA-MW14 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 7 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
M. Wold | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
403731.0 North 2048181.2 East | | | |
| | | 9. SURFACE ELEVATION
1910.3' MSL | | | |
| | | 10. DATE STARTED
5/3/2018 | | 11. DATE COMPLETED
5/3/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
14 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
11.85 ft on 5/3/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
50.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
11.48 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | | 21. TOTAL CORE RECOVERY
N/A % |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



| | |
|--|----------------------------|
| PROJECT CHAAP Grand Island, Nebraska | HOLE NO BKRD-LGIA-MW14 |
|--|----------------------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW14

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|--|
| 1910.3 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1909.3 | 1 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained mottles. (5GY 4/1) | | | | | |
| 1908.3 | 2 | | | | | | |
| 1907.3 | 3 | | | | | | |
| 1906.3 | 4 | | | | | | |
| 1905.3 | 5 | | | | | | |
| 1904.3 | 6 | (CL) LEAN CLAY (88%): Low plasticity, moist, Low dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (5Y 5/2) | | | | | |
| 1903.3 | 7 | | | | | | |
| 1902.3 | 8 | | | | | | |
| 1901.3 | 9 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
8.5-10.5 ft.
100% Rec. | | 3 | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

BKRD-LGIA-MW14

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW14

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1901.3 | 9 | (CL) LEAN CLAY (88%): Low plasticity, moist, Low dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (5Y 5/2) (continued) | | | | 4 | |
| | | | | | | 4 | |
| 1900.3 | 10 | | | | | 5 | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
10.5-12.5 ft.
100% Rec. | | 8 | |
| 1899.3 | 11 | | | | | 6 | |
| | | | | | | 5 | |
| 1898.3 | 12 | | | | | 8 | |
| | | | | | | | |
| | | | | | | | |
| 1897.3 | 13 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained mottles. (10Y 4/1) | | | | 6 | |
| | | | | | | | |
| | | | | | | | |
| 1896.3 | 14 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | 3 | |
| | | | | | | 3 | |
| | | | | | | 4 | |
| 1895.3 | 15 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1894.3 | 16 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1893.3 | 17 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1892.3 | 18 | | | | | | |
| | | | | | | | |
| | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW14

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW14

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 4 OF 7 SHEETS | |
|--------------|--------------|---|--|--|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1892.3 | 18 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | | | | | | |
| | | | | | | | 5 | | |
| 1891.3 | 19 | | | | | | 7 | | |
| | | | | | | | 8 | | |
| 1890.3 | 20 | | | | | | 8 | | |
| 1889.3 | 21 | | | | | | | | |
| 1888.3 | 22 | | | | | | | | |
| 1887.3 | 23 | | | | | | | | |
| 1886.3 | 24 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
23.5-25.5 ft.
100% Rec. | | 7 | | |
| | | | | | | | 5 | | |
| | | | | | | | 6 | | |
| 1885.3 | 25 | | | | | | 6 | | |
| 1884.3 | 26 | | | | | | | | |
| 1883.3 | 27 | | | | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

BKRD-LGIA-MW14

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW14

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | | | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1883.3 | 27 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | | | | | |
| 1882.3 | 28 | | | | | | | | | | |
| 1881.3 | 29 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
28.5-30.5 ft.
100% Rec. | | 4 | | | | | |
| 1880.3 | 30 | | | | | 6 | | | | | |
| | | | | | | 7 | | | | | |
| | | | | | | 8 | | | | | |
| 1879.3 | 31 | | | | | | | | | | |
| 1878.3 | 32 | | | | | | | | | | |
| 1877.3 | 33 | | | | | | | | | | |
| 1876.3 | 34 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 7
33.5-35.5 ft.
100% Rec. | | 8 | | | | | |
| | | | | | | 7 | | | | | |
| | | | | | | 9 | | | | | |
| 1875.3 | 35 | | | | | 9 | | | | | |
| 1874.3 | 36 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 8
35.5-37.5 ft.
100% Rec. | | 6 | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW14

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW14

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 6 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1874.3 | 36 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | 7 | |
| | | | | | | 7 | |
| 1873.3 | 37 | | | | | 8 | |
| | | | | | | | |
| 1872.3 | 38 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1871.3 | 39 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 9
38.5-40.5 ft.
100% Rec. | | 6 | |
| | | | | | | 8 | |
| | | | | | | 9 | |
| 1870.3 | 40 | | | | | 9 | |
| | | | | | | | |
| | | | | | | | |
| 1869.3 | 41 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1868.3 | 42 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1867.3 | 43 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1866.3 | 44 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 10
43.5-45.5 ft.
100% Rec. | | 7 | |
| | | | | | | 8 | |
| | | | | | | 8 | |
| 1865.3 | 45 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW14

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW14

| PROJECT | | DISTRICT | | ANALYTICAL | | | SHEET | |
|-------------------------------|--------------|--|--|--|---------------------------------|-------------------|----------------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | S. Cameron | | | 7 OF 7 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1865.3 | 45 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | 9 | | |
| 1864.3 | 46 | | | | | | | |
| 1863.3 | 47 | | | | | | | |
| | | (CL) LEAN CLAY (88%): Low plasticity, moist,
Low dry strength, medium toughness, 10%
fine sand, no dilatancy. (5Y 4/1) | | | | | | |
| 1862.3 | 48 | | | | | | | |
| | | | | | | | | |
| 1861.3 | 49 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 11
48.5-50.5 ft.
100% Rec. | | 9 | | |
| | | | | | | 11 | | |
| | | | | | | 12 | | |
| 1860.3 | 50 | | | | | 13 | | |
| 1859.3 | 51 | Bottom of Borehole @ 50.5 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 14-47 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | |
| 1858.3 | 52 | | | | | | | |
| 1857.3 | 53 | | | | | | | |
| 1856.3 | 54 | | | | | | | |

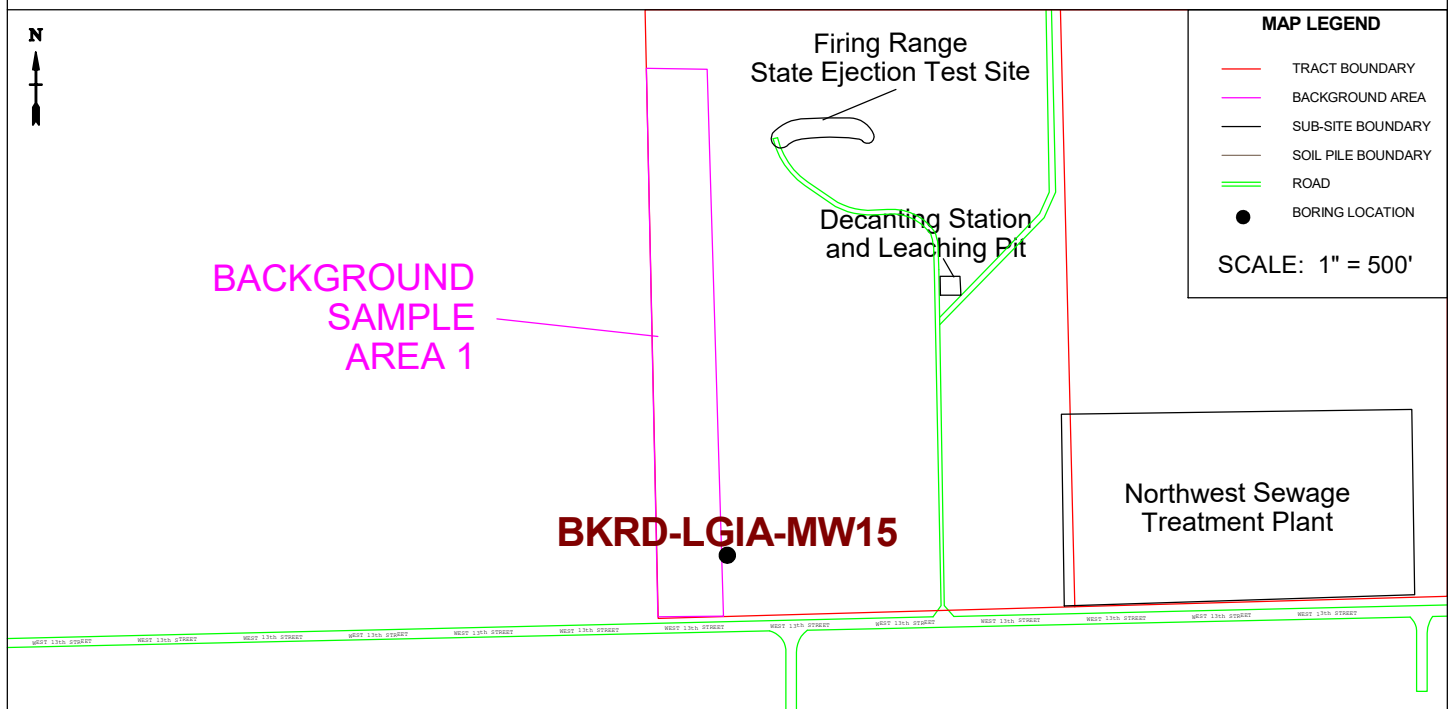
PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW14

| | | | | | |
|--|---------------------|--|---------------------------------------|---------------------------------|-------------------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
BKRD-LGIA-MW15 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET 1 OF 7 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
M. Wold | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
403672.4 North 2048199.6 East | | | |
| | | 9. SURFACE ELEVATION
1909.9' MSL | | | |
| | | 10. DATE STARTED
5/2/2018 | 11. DATE COMPLETED
5/2/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
14 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
11.46 ft on 5/3/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
50.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
11.34 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
5 | VOC
Method 8260B | METALS
Method 6020 | OTHER (SPECIFY)
Explosives (8330B) | OTHER (SPECIFY)
Cr+6 (7196A) | OTHER (SPECIFY)
PAHs (8270C-SIM) |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



| | |
|--|-----------------------------|
| PROJECT CHAAP Grand Island, Nebraska | HOLE NO BKRD-LGIA-MW15 |
|--|-----------------------------|

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW15

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1909.9 | 0 | Topsoil | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | Grab 1
0-0.5 ft.
100% Rec. | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1908.9 | 1 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (5Y 5/2) | | | | | |
| 1907.9 | 2 | | | | | | |
| 1906.9 | 3 | | | | | | |
| 1905.9 | 4 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | Grab 2
4-9 ft. | | | |
| 1904.9 | 5 | | | | | | |
| 1903.9 | 6 | | | | | | |
| 1902.9 | 7 | | | | | | |
| 1901.9 | 8 | | | | | | |
| 1900.9 | 9 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
8.5-10.5 ft.
100% Rec. | | 2 | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

BKRD-LGIA-MW15

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW15

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1900.9 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (5Y 5/2) (continued) | | | | 2 | |
| | | | | | | 2 | |
| 1899.9 | 10 | | | | | 3 | |
| | | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained mottles. (5GY 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
10.5-12.5 ft.
100% Rec. | | 4 | |
| 1898.9 | 11 | | | | | 4 | |
| | | | | | | 4 | |
| 1897.9 | 12 | | | | | 4 | |
| | | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
12.5-14.5 ft.
100% Rec. | | 5 | |
| 1896.9 | 13 | | | | | 3 | |
| | | | | | | 3 | |
| 1895.9 | 14 | | | | | 4 | |
| 1894.9 | 15 | | | | | | |
| | | | | | | | |
| 1893.9 | 16 | | | | | | |
| | | | | | | | |
| 1892.9 | 17 | | | | | | |
| | | | | | | | |
| 1891.9 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

BKRD-LGIA-MW15

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW15

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 4 OF 7 SHEETS | |
|--------------|--------------|---|--|--|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1891.9 | 18 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | | | | | | |
| | | | | | | | 5 | | |
| 1890.9 | 19 | | | | | | 7 | | |
| | | | | | | | 8 | | |
| 1889.9 | 20 | | | | | | 8 | | |
| | | | | | | | | | |
| 1888.9 | 21 | | | | | | | | |
| | | | | | | | | | |
| 1887.9 | 22 | | | | | | | | |
| | | | | | | | | | |
| 1886.9 | 23 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 1885.9 | 24 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
23.5-25.5 ft.
100% Rec. | | 5 | | |
| | | | | | | | 5 | | |
| | | | | | | | 6 | | |
| 1884.9 | 25 | | | | | | 6 | | |
| | | | | | | | | | |
| 1883.9 | 26 | | | | | | | | |
| | | | | | | | | | |
| 1882.9 | 27 | | | | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

BKRD-LGIA-MW15

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW15

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 5 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1882.9 | 27 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | |
| 1881.9 | 28 | | | | | | |
| 1880.9 | 29 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
28.5-30.5 ft.
100% Rec. | | 7 | |
| 1879.9 | 30 | | | | | 6 | |
| | | | | | | 7 | |
| | | | | | | 8 | |
| 1878.9 | 31 | | | | | | |
| 1877.9 | 32 | | | | | | |
| 1876.9 | 33 | | | | | | |
| 1875.9 | 34 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 7
33.5-35.5 ft.
100% Rec. | | 7 | |
| | | | | | | 8 | |
| | | | | | | 9 | |
| 1874.9 | 35 | | | | | 9 | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 8
35.5-37.5 ft.
100% Rec. | | 8 | |
| 1873.9 | 36 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW15

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW15

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 6 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1873.9 | 36 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | 11 | |
| | | | | | | 13 | |
| 1872.9 | 37 | | | | | 15 | |
| | | | | | | | |
| 1871.9 | 38 | | | | | | |
| | | | | | | | |
| 1870.9 | 39 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 9
38.5-40.5 ft.
100% Rec. | | 8 | |
| | | | | | | 8 | |
| | | | | | | 9 | |
| 1869.9 | 40 | | | | | 9 | |
| | | | | | | | |
| 1868.9 | 41 | | | | | | |
| | | | | | | | |
| 1867.9 | 42 | | | | | | |
| | | | | | | | |
| 1866.9 | 43 | | | | | | |
| | | | | | | | |
| 1865.9 | 44 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 10
43.5-45.5 ft.
100% Rec. | | 7 | |
| | | | | | | 8 | |
| | | | | | | 8 | |
| 1864.9 | 45 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW15

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW15

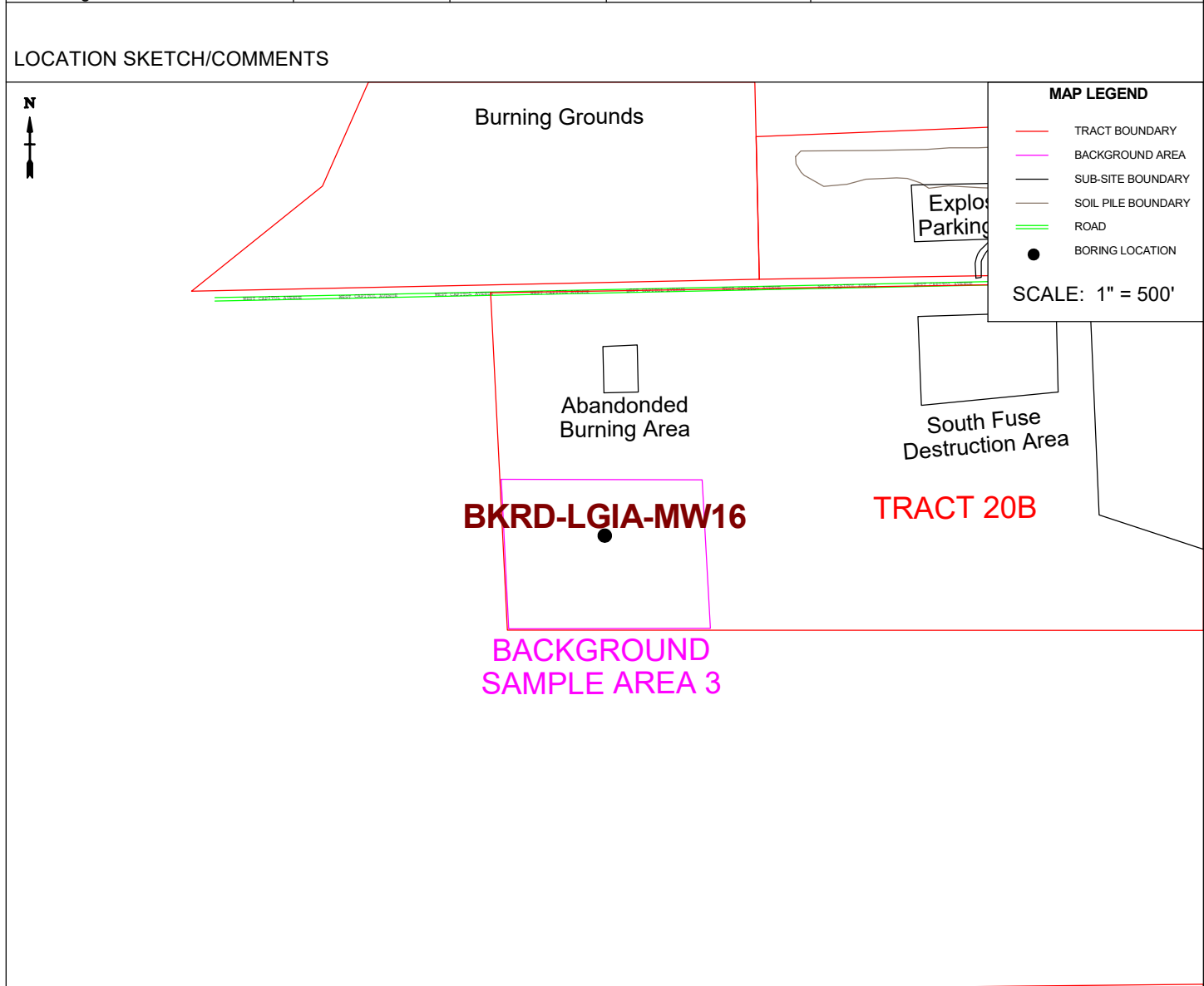
| PROJECT | | DISTRICT | | ANALYTICAL | | | SHEET | |
|-------------------------------|--------------|--|--|--|---------------------------------|-------------------|----------------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | 7 OF 7 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1864.9 | 45 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | 8 | | |
| 1863.9 | 46 | | | | | | | |
| 1862.9 | 47 | | | | | | | |
| 1861.9 | 48 | (CL) LEAN CLAY (90%): Low to medium
plasticity, medium toughness, medium dry
strength, no dilatancy, slightly moist, fine sand
(10%). (5GY 5/1) | | | | | | |
| 1860.9 | 49 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 11
48.5-50.5 ft.
100% Rec. | | 10 | | |
| 1859.9 | 50 | | | | | 11 | | |
| | | | | | | 11 | | |
| | | | | | | 13 | | |
| 1858.9 | 51 | Bottom of Borehole @ 50.5 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 14-47 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | |
| 1857.9 | 52 | | | | | | | |
| 1856.9 | 53 | | | | | | | |
| 1855.9 | 54 | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW15

| | | | | | |
|--|-------------------|---|---------------------------------------|----------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
BKRD-LGIA-MW16 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 6 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
408036.9 North 2048662.4 East | | | |
| | | 9. SURFACE ELEVATION
1902.9' MSL | | | |
| | | 10. DATE STARTED
3/26/2018 | | 11. DATE COMPLETED
3/26/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
13.5 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
9.09 ft 20 Hrs Post-Install | | | |
| 14. TOTAL DEPTH OF HOLE
39.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
9.09 (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |




HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW16

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | | SHEET 2 OF 6 SHEETS | |
|--------------|--------------|---|--|---|--|---------------------------------|-------------------|---|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1902.9 | 0 | See BKRD-SS/SB15 Boring Log | | HA
0-5 ft. | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery | |
| 1901.9 | 1 | | | | | | | | |
| 1900.9 | 2 | | | | | | | | |
| 1899.9 | 3 | | | | | | | | |
| 1898.9 | 4 | | | | | | | | |
| 1897.9 | 5 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | |  | | | | | |
| 1896.9 | 6 | | | | | | | | |
| 1895.9 | 7 | | | | | | | | |
| 1894.9 | 8 | | | | | | | | |
| | | | | | | | | | |
| | | *See Next Page | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
8.5-10.5 ft.
100% Rec. | | | WH | | |
| 1893.9 | 9 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW16

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW16

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1893.9 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | 2 | |
| 1892.9 | 10 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy. (5Y 4/1) | | | | 2 | |
| | | | | | | 3 | |
| 1891.9 | 11 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy. (5Y 4/1) | | | | | |
| 1890.9 | 12 | | | | | | |
| 1889.9 | 13 | | | | | | |
| 1888.9 | 14 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy. (5Y 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
13.5-15.5 ft.
100% Rec. | | 8 | |
| | | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | 12 | |
| 1887.9 | 15 | | | | | 14 | |
| | | | | | | 16 | |
| 1886.9 | 16 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | |
| 1885.9 | 17 | | | | | | |
| 1884.9 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

BKRD-LGIA-MW16

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW16

| PROJECT | | DISTRICT | | HOLE NO | | | SHEET 4 OF 6 SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|---------------------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | BKRD-LGIA-MW16 | | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1884.9 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | |
| 1883.9 | 19 | | | | | | | |
| 1882.9 | 20 | | | | | | | |
| 1881.9 | 21 | | | | | | | |
| 1880.9 | 22 | | | | | | | |
| 1879.9 | 23 | | | | | | | |
| 1878.9 | 24 | | | | | | | |
| 1877.9 | 25 | | | | | | | |
| 1876.9 | 26 | | | | | | | |
| 1875.9 | 27 | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW16

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW16

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | 5 | | 6 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1875.9 | 27 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | | | |
| 1874.9 | 28 | | | | | | | | | | |
| 1873.9 | 29 | | | | | | | | | | |
| 1872.9 | 30 | | | | | | | | | | |
| 1871.9 | 31 | | | | | | | | | | |
| 1870.9 | 32 | | | | | | | | | | |
| 1869.9 | 33 | | | | | | | | | | |
| 1868.9 | 34 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
33.5-35.5 ft.
100% Rec. | | 8 | | | | | |
| 1867.9 | 35 | | | | | 10 | | | | | |
| | | | | | | 11 | | | | | |
| | | | | | | 14 | | | | | |
| | | *See Next Page | | | | | | | | | |
| 1866.9 | 36 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW16

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW16

| PROJECT | | DISTRICT | | ANALYTICAL | | | SHEET | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|----------------|--|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | 6 | | 6 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | | |
| 1866.9 | 36 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | | | | |
| 1865.9 | 37 | (CL) LEAN CLAY (90%): Low to medium
plasticity, medium toughness, medium dry
strength, no dilatancy, slightly moist, fine sand
(10%). (10GY 5/1) | | | | | | | | | | |
| 1864.9 | 38 | (CL) LEAN CLAY (90%): Low to medium
plasticity, medium toughness, medium dry
strength, no dilatancy, slightly moist, fine sand
(10%). (10GY 5/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
37.5-39.5 ft.
100% Rec. | | 9 | | | | | | |
| | | | | | | 12 | | | | | | |
| | | | | | | 13 | | | | | | |
| 1863.9 | 39 | | | | | 16 | | | | | | |
| 1862.9 | 40 | Bottom of Borehole @ 39.5 ft
100 Gallons of Water Lost During Drilling
Heaving Sands13.6-36.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | | | | | |
| 1861.9 | 41 | | | | | | | | | | | |
| 1860.9 | 42 | | | | | | | | | | | |
| 1859.9 | 43 | | | | | | | | | | | |
| 1858.9 | 44 | | | | | | | | | | | |
| 1857.9 | 45 | | | | | | | | | | | |

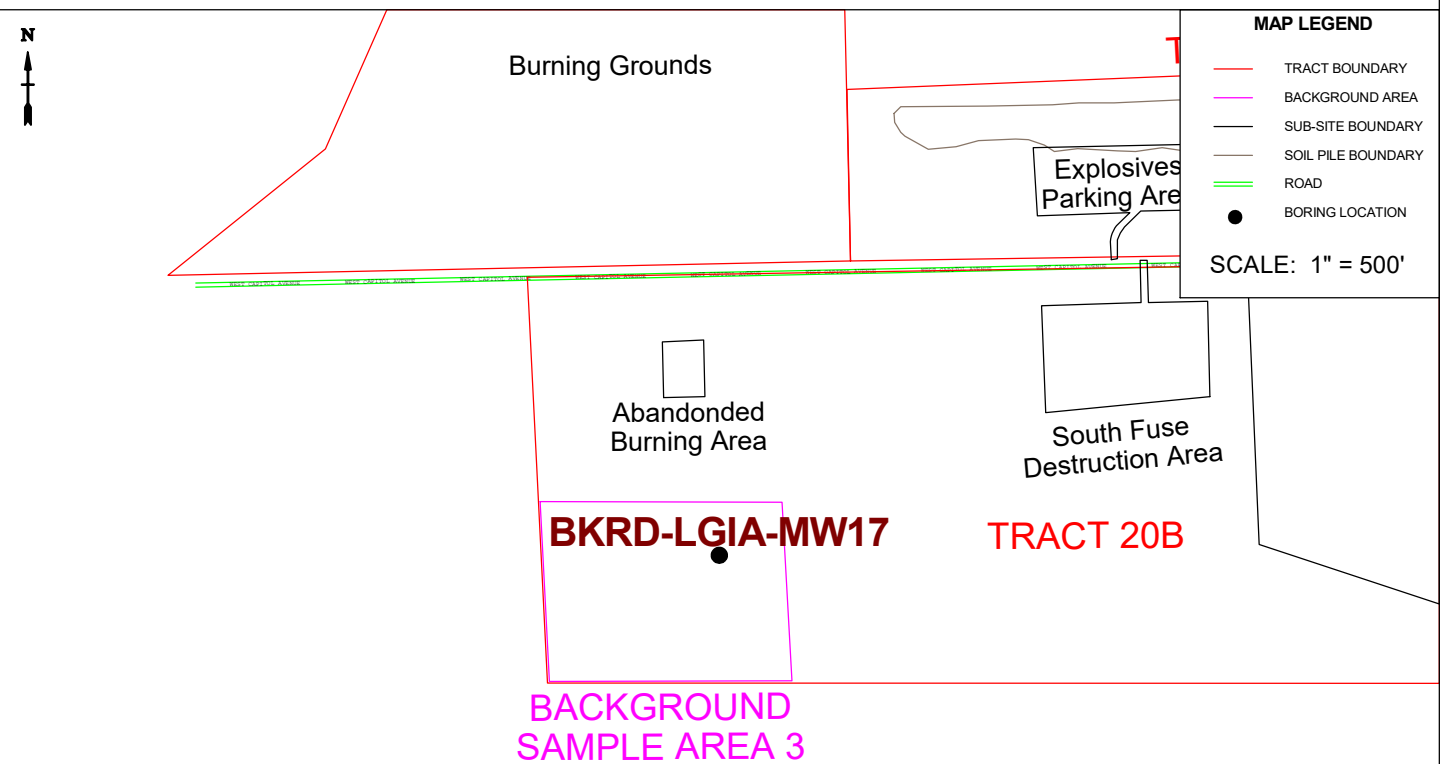
PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW16

| | | | | | |
|--|-------------------|--|---------------------------------------|----------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
BKRD-LGIA-MW17 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 6 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
408073.6 North 2048804.7 East | | | |
| | | 9. SURFACE ELEVATION
1902.7' MSL | | | |
| | | 10. DATE STARTED
3/27/2018 | | 11. DATE COMPLETED
3/27/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
12.4 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
6.6 ft 18 Hrs Post-Install | | | |
| 14. TOTAL DEPTH OF HOLE
35.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
6.6 (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS




HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW17

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|---|--|---------------------------------|-------------------|---|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 2 | | 6 | | | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| 1902.7 | 0 | See BKRD-SS/SB17 Boring Log | | HA
0-5 ft. | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery | | | |
| 1901.7 | 1 | | | | | | | | | | |
| 1900.7 | 2 | | | | | | | | | | |
| 1899.7 | 3 | | | | | | | | | | |
| 1898.7 | 4 | | | | | | | | | | |
| 1897.7 | 5 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | |  | | | | | | | |
| 1896.7 | 6 | | | | | | | | | | |
| 1895.7 | 7 | | | | | | | | | | |
| 1894.7 | 8 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | *See Next Page | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
8.5-10.5 ft.
100% Rec. | | | 1 | | | | |
| 1893.7 | 9 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW17

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW17

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1893.7 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | 1 | |
| | | | | | | 2 | |
| 1892.7 | 10 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, iron-stained coarse-sand sized clasts (2%), no dilatancy. (5Y 4/1) | | | | 2 | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
10.5-12.5 ft.
100% Rec. | | 1 | |
| 1891.7 | 11 | | | | | 3 | |
| | | | | | | 3 | |
| 1890.7 | 12 | | | | | 5 | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
12.5-14.5 ft.
100% Rec. | | 7 | |
| 1889.7 | 13 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | 16 | |
| | | | | | | 16 | |
| 1888.7 | 14 | | | | | 16 | |
| 1887.7 | 15 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | |
| 1886.7 | 16 | | | | | | |
| 1885.7 | 17 | | | | | | |
| 1884.7 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW17

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW17

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 4 | | | | 6 | | SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1884.7 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | | | |
| 1883.7 | 19 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1882.7 | 20 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1881.7 | 21 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1880.7 | 22 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1879.7 | 23 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
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| | | | | | | | | | | | |
| 1878.7 | 24 | | | | | | | | | | |
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| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1877.7 | 25 | | | | | | | | | | |
| | | | | | | | | | | | |
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| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1876.7 | 26 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1875.7 | 27 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW17

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW17

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | 5 | | 6 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1875.7 | 27 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | | | |
| 1874.7 | 28 | | | | | | | | | | |
| 1873.7 | 29 | | | | | | | | | | |
| 1872.7 | 30 | | | | | | | | | | |
| 1871.7 | 31 | | | | | | | | | | |
| 1870.7 | 32 | | | | | | | | | | |
| 1869.7 | 33 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
33.5-35.5 ft.
100% Rec. | | 2 | | | | | |
| 1868.7 | 34 | | | | | 4 | | | | | |
| 1867.7 | 35 | | | | | 6 | | | | | |
| | | (CL) LEAN CLAY (90%): Low to medium
plasticity, medium toughness, medium dry
strength, no dilatancy, slightly moist, fine sand
(10%). (10GY 5/1) | | | | 6 | | | | | |
| 1866.7 | 36 | Bottom of Borehole @ 35.5 ft
100 Gallons of Water Lost During Drilling
Heaving Sands12.75-35 ft | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW17

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW17


| PROJECT | | | | DISTRICT | | | | SHEET | | | | OF | | | | SHEETS | | | |
|------------------------|--------------|---|--|---|--|-----------------------------------|--|---------------------------------|-------------------|----------------|--|----|--|--|--|--------|--|--|--|
| Grand Island, Nebraska | | | | US Army Corps of Engineers - Omaha District | | | | | | | | | | | | | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | | | | | | |
| 1866.7 | 36 | Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | | | | | | | | | | | | |
| 1865.7 | 37 | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
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| 1864.7 | 38 | | | | | | | | | | | | | | | | | | |
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CHAAP Grand Island, Nebraska

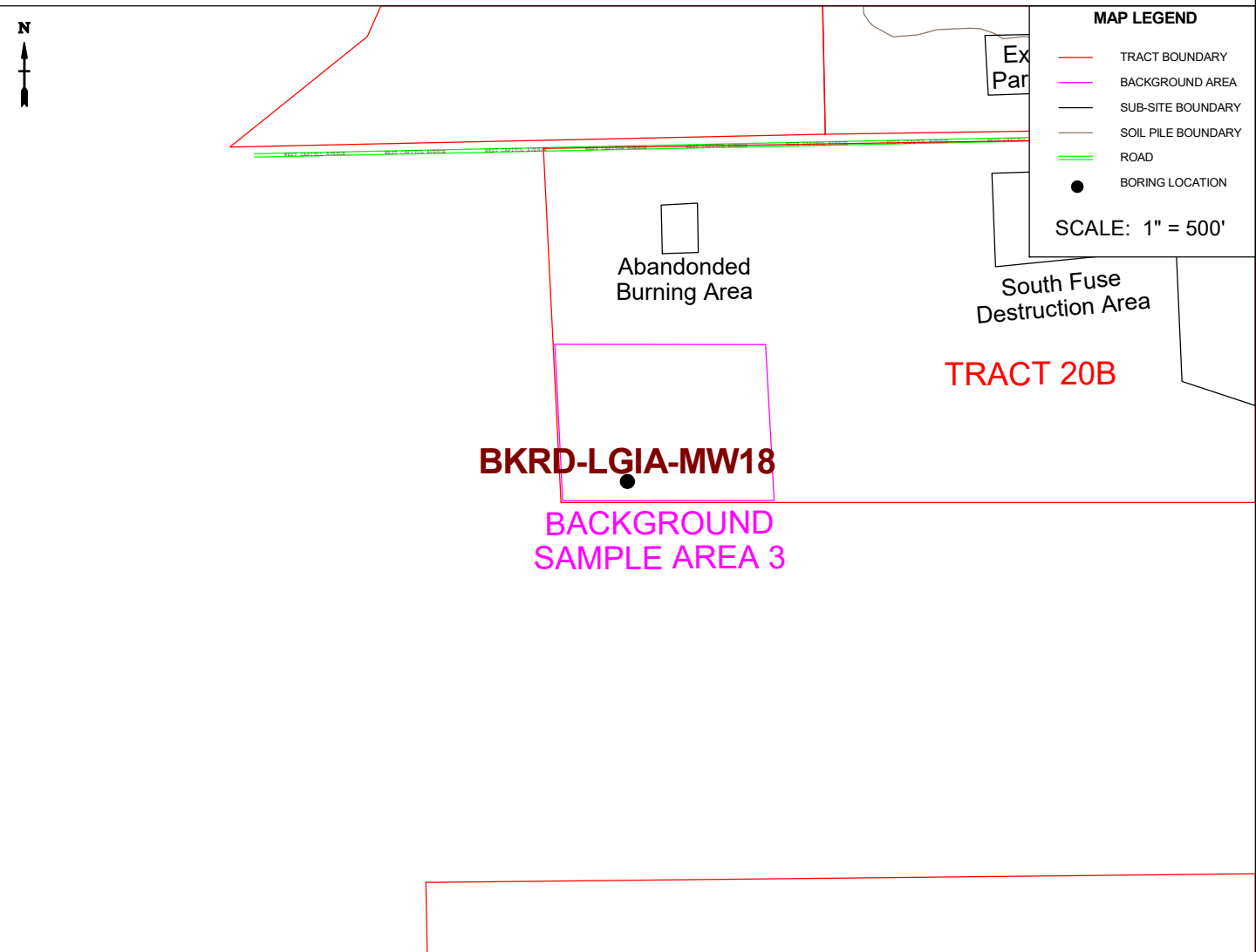
HOLE NO

BKRD-LGIA-MW17

| | | | | | |
|--|-------------------|---|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
BKRD-LGIA-MW18 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 6 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
407803.0 North 2048555.3 East | | | |
| | | 9. SURFACE ELEVATION
1903.2' MSL | | | |
| | | 10. DATE STARTED
3/29/2018 | | 11. DATE COMPLETED
3/29/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
12.4 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
7.37 ft on 4/3/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
35.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



| | | | |
|---------|------------------------------|---------|----------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | BKRD-LGIA-MW18 |
|---------|------------------------------|---------|----------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW18

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1903.2 | 0 | See BKRD-SS/SB18 Boring Log | | HA
0-5 ft. | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1902.2 | 1 | | | | | | |
| 1901.2 | 2 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1900.2 | 3 | | | | | | |
| 1899.2 | 4 | | | | | | |
| 1898.2 | 5 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1897.2 | 6 | | | | | | |
| 1896.2 | 7 | | | | | | |
| 1895.2 | 8 | | | | | | |
| 1894.2 | 9 | *See Next Page | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
8.5-10.5 ft.
100% Rec. | | 1 | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

BKRD-LGIA-MW18

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW18

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1894.2 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | 1 | |
| | | | | | | 1 | |
| 1893.2 | 10 | | | | | 2 | |
| | | | | | | 3 | |
| 1892.2 | 11 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy. (5Y 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
10.5-12.5 ft.
100% Rec. | | 4 | |
| | | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | 5 | |
| 1891.2 | 12 | | | | | 10 | |
| | | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | |
| 1890.2 | 13 | | | | | | |
| | | | | | | | |
| 1889.2 | 14 | | | | | | |
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| 1888.2 | 15 | | | | | | |
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| 1887.2 | 16 | | | | | | |
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| 1886.2 | 17 | | | | | | |
| | | | | | | | |
| 1885.2 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW18

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW18

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 4 | | 6 | | | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1885.2 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | | | |
| 1884.2 | 19 | | | | | | | | | | |
| 1883.2 | 20 | | | | | | | | | | |
| 1882.2 | 21 | | | | | | | | | | |
| 1881.2 | 22 | | | | | | | | | | |
| 1880.2 | 23 | | | | | | | | | | |
| 1879.2 | 24 | | | | | | | | | | |
| 1878.2 | 25 | | | | | | | | | | |
| 1877.2 | 26 | | | | | | | | | | |
| 1876.2 | 27 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW18

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW18

| PROJECT | | DISTRICT | | SHEET | | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|----------------|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 5 | | | 6 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| 1876.2 | 27 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | | |
| 1875.2 | 28 | | | | | | | | | |
| 1874.2 | 29 | | | | | | | | | |
| 1873.2 | 30 | | | | | | | | | |
| 1872.2 | 31 | | | | | | | | | |
| 1871.2 | 32 | | | | | | | | | |
| 1870.2 | 33 | (CL) LEAN CLAY (90%): Low to medium
plasticity, medium toughness, medium dry
strength, no dilatancy, slightly moist, fine sand
(10%). (10GY 5/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
33.5-35.5 ft.
100% Rec. | | 5 | | | | |
| 1869.2 | 34 | | | | | 8 | | | | |
| | | | | | | 12 | | | | |
| 1868.2 | 35 | | | | | 12 | | | | |
| 1867.2 | 36 | Bottom of Borehole @ 35.5 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 11.5-33 ft | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW18

HTRW DRILLING LOG

INSPECTOR

S. Cameron

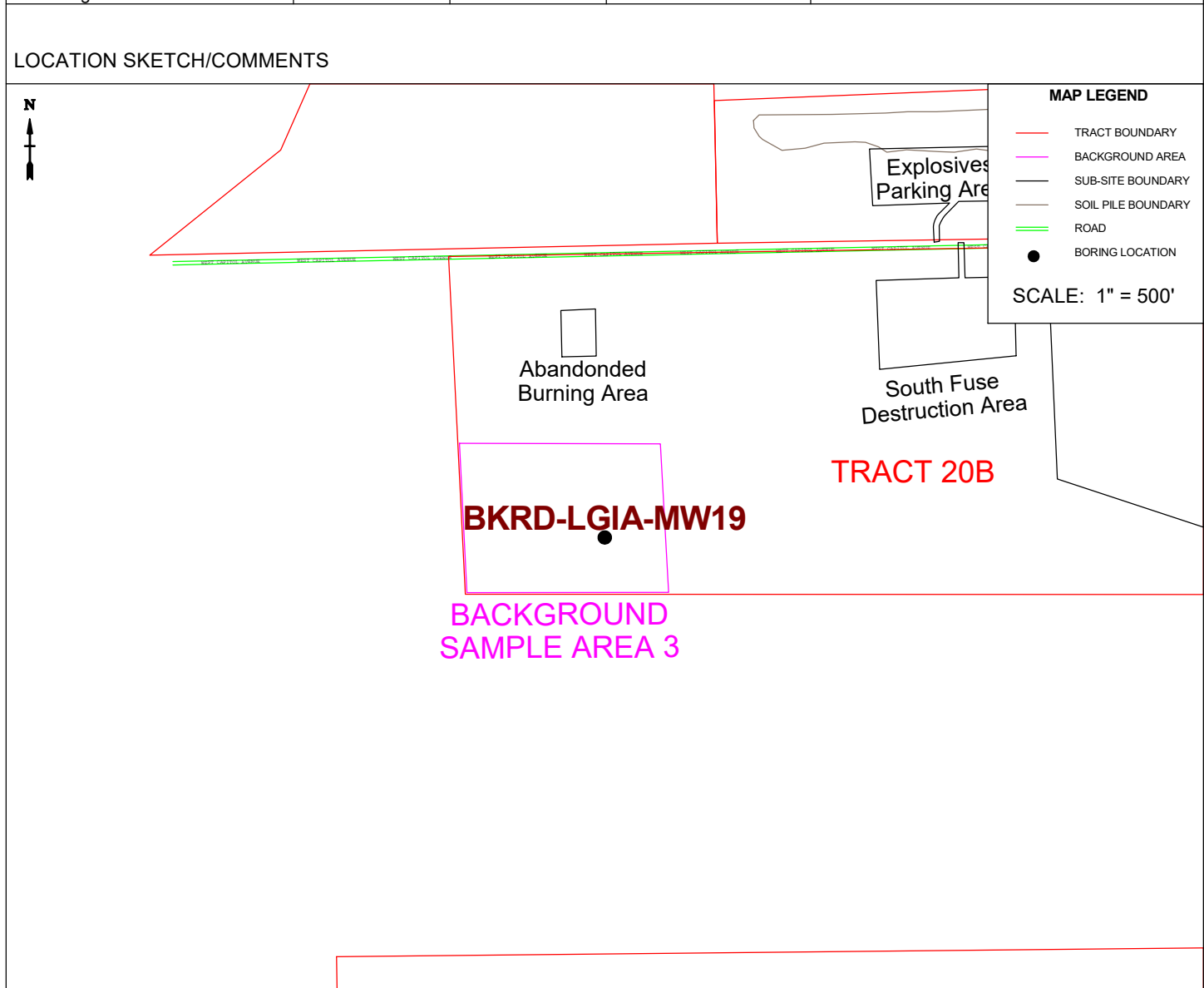
HOLE NUMBER

BKRD-LGIA-MW18

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 6 | | | | 6 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1867.2 | 36 | Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | | | | |
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| 1866.2 | 37 | | | | | | | | | | |
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|--|-------------------|---|---------------------------------------|----------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
BKRD-LGIA-MW19 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 6 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
407918.4 North 2048793.6 East | | | |
| | | 9. SURFACE ELEVATION
1903.8' MSL | | | |
| | | 10. DATE STARTED
3/27/2018 | 11. DATE COMPLETED
3/27/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
14 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
7.57 ft 24 Hrs Post-Install | | | |
| 14. TOTAL DEPTH OF HOLE
37.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
7.57 (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |



| | | | |
|---------|------------------------------|---------|----------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | BKRD-LGIA-MW19 |
|---------|------------------------------|---------|----------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW19

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1903.8 | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | HA
0-4 ft. | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1902.8 | 1 | | | | | | |
| 1901.8 | 2 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1900.8 | 3 | | | | | | |
| 1899.8 | 4 | | | | | | |
| 1898.8 | 5 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1897.8 | 6 | | | | | | |
| 1896.8 | 7 | | | | | | |
| 1895.8 | 8 | | | | | | |
| 1894.8 | 9 | *See Next Page | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
8.5-10.5 ft.
100% Rec. | | WH | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

BKRD-LGIA-MW19

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW19

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET | | 3 | | OF | | 6 | | SHEETS | |
|--------------|--------------|---|--|----------|--|---|--|-------|---------------------------------|-------------------|----------------|----|--|---|--|--------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | | | |
| 1894.8 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | | | | | 2 | | | | | | | |
| | | | | | | | | | | 2 | | | | | | | |
| 1893.8 | 10 | | | | | | | | | 3 | | | | | | | |
| 1892.8 | 11 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | | | | | | | | | | | |
| 1891.8 | 12 | | | | | | | | | | | | | | | | |
| 1890.8 | 13 | | | | | | | | | | | | | | | | |
| 1889.8 | 14 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy. (5Y 4/1) | | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
13.5-15.5 ft.
100% Rec. | | | 8 | | | | | | | |
| | | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | | | 12 | | | | | | | |
| 1888.8 | 15 | | | | | | | | | 14 | | | | | | | |
| | | | | | | | | | | 16 | | | | | | | |
| 1887.8 | 16 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | | | | | | | | | | |
| 1886.8 | 17 | | | | | | | | | | | | | | | | |
| 1885.8 | 18 | | | | | | | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW19

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW19

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 4 | | | | 6 | | SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1885.8 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | | | |
| 1884.8 | 19 | | | | | | | | | | |
| 1883.8 | 20 | | | | | | | | | | |
| 1882.8 | 21 | | | | | | | | | | |
| 1881.8 | 22 | | | | | | | | | | |
| 1880.8 | 23 | | | | | | | | | | |
| 1879.8 | 24 | | | | | | | | | | |
| 1878.8 | 25 | | | | | | | | | | |
| 1877.8 | 26 | | | | | | | | | | |
| 1876.8 | 27 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW19

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW19

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 5 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1876.8 | 27 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | |
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| 1875.8 | 28 | | | | | | |
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| 1874.8 | 29 | | | | | | |
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| 1873.8 | 30 | | | | | | |
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| 1872.8 | 31 | | | | | | |
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| 1871.8 | 32 | | | | | | |
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| | | | | | | | |
| 1870.8 | 33 | | | | | | |
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| | | | | | | | |
| 1869.8 | 34 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
33.5-35.5 ft.
100% Rec. | | 8 | |
| | | | | | | 10 | |
| | | | | | | 11 | |
| | | | | | | | |
| | | | | | | 14 | |
| 1868.8 | 35 | | | | | | |
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PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW19

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW19

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|--|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 6 | | 6 | | 6 | | SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1867.8 | 36 | (CL) LEAN CLAY (90%): Low to medium plasticity, medium toughness, medium dry strength, no dilatancy, slightly moist, fine sand (10%). (10GY 5/1) (continued) | | | | 12 | | | | | |
| | | | | | | 13 | | | | | |
| 1866.8 | 37 | | | | | 16 | | | | | |
| 1865.8 | 38 | Bottom of Borehole @ 37.5 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 14-35.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | | | | |
| 1864.8 | 39 | | | | | | | | | | |
| 1863.8 | 40 | | | | | | | | | | |
| 1862.8 | 41 | | | | | | | | | | |
| 1861.8 | 42 | | | | | | | | | | |
| 1860.8 | 43 | | | | | | | | | | |
| 1859.8 | 44 | | | | | | | | | | |
| 1858.8 | 45 | | | | | | | | | | |

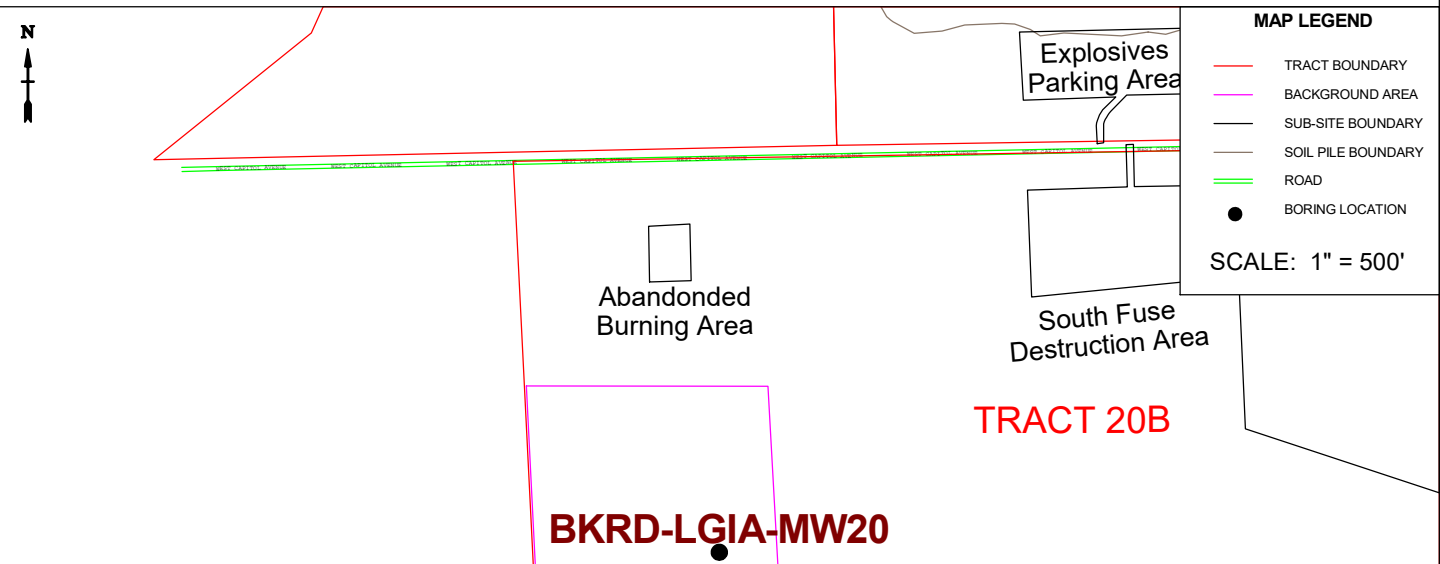
PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW19

| | | | | | |
|--|-------------------|---|---------------------------------------|----------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
BKRD-LGIA-MW20 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 6 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
407779.8 North 2048841.0 East | | | |
| | | 9. SURFACE ELEVATION
1903.5' MSL | | | |
| | | 10. DATE STARTED
3/28/2018 | 11. DATE COMPLETED
3/28/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
12.4 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
7.23 ft on 4/3/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
37.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS




HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW20

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 2 OF 6 SHEETS | |
|--------------|--------------|---|--|--|---|---|---------------------------------|---------------------|---|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1903.5 | 0 | See BKRD-SS/SB19 Boring Log | | | HA
0-5 ft. | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery |
| 1902.5 | 1 | | | | | | | | |
| 1901.5 | 2 | | | | | | | | |
| 1900.5 | 3 | | | | | | | | |
| 1899.5 | 4 | | | | | | | | |
| 1898.5 | 5 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | |  | | | | |
| 1897.5 | 6 | | | | | | | | |
| 1896.5 | 7 | | | | | | | | |
| 1895.5 | 8 | | | | | | | | |
| | | | | | | | | | |
| | | *See Next Page | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
8.5-10.5 ft.
100% Rec. | | | 1 | |
| 1894.5 | 9 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW20

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW20

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1894.5 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | 2 | |
| | | | | | | 2 | |
| 1893.5 | 10 | | | | | 1 | |
| | | | | | | 1 | |
| 1892.5 | 11 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, iron-stained coarse-sand sized clasts (2%), no dilatancy. (5Y 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
10.5-12.5 ft.
100% Rec. | | 2 | |
| | | | | | | 2 | |
| 1891.5 | 12 | | | | | 3 | |
| | | | | | | | |
| 1890.5 | 13 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | |
| | | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | |
| 1889.5 | 14 | | | | | | |
| 1888.5 | 15 | | | | | | |
| 1887.5 | 16 | | | | | | |
| 1886.5 | 17 | | | | | | |
| 1885.5 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

BKRD-LGIA-MW20

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW20

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 4 | | | | 6 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1885.5 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | | | |
| 1884.5 | 19 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1883.5 | 20 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1882.5 | 21 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1881.5 | 22 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1880.5 | 23 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1879.5 | 24 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1878.5 | 25 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1877.5 | 26 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1876.5 | 27 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW20

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW20

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 5 OF 6 SHEETS | |
|--------------|--------------|---|--|---|---------------------------------|---------------------|----------------|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1876.5 | 27 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | |
| 1875.5 | 28 | | | | | | |
| 1874.5 | 29 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
28.5-30.5 ft.
100% Rec. | | 1 | |
| | | | | | | 1 | |
| | | | | | | 2 | |
| 1873.5 | 30 | | | | | 2 | |
| | | | | | | | |
| 1872.5 | 31 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | |
| | | | | | | | |
| 1871.5 | 32 | | | | | | |
| | | | | | | | |
| 1870.5 | 33 | | | | | | |
| | | | | | | | |
| 1869.5 | 34 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
33.5-35.5 ft.
100% Rec. | | 6 | |
| | | | | | | 7 | |
| | | | | | | 7 | |
| 1868.5 | 35 | | | | | 8 | |
| | | | | | | | |
| | | *See Next Page | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
35.5-37.5 ft.
100% Rec. | | 3 | |
| 1867.5 | 36 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW20

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

BKRD-LGIA-MW20

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|--|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 6 | | 6 | | 6 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1867.5 | 36 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | 8 | | | | | |
| 1866.5 | 37 | (CL) LEAN CLAY (90%): Low to medium
plasticity, medium toughness, medium dry
strength, no dilatancy, slightly moist, fine sand
(10%). (10GY 5/1) | | | | 13 | | | | | |
| | | | | | | 16 | | | | | |
| 1865.5 | 38 | Bottom of Borehole @ 37.5 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 12.4-36.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | | | | |
| 1864.5 | 39 | | | | | | | | | | |
| 1863.5 | 40 | | | | | | | | | | |
| 1862.5 | 41 | | | | | | | | | | |
| 1861.5 | 42 | | | | | | | | | | |
| 1860.5 | 43 | | | | | | | | | | |
| 1859.5 | 44 | | | | | | | | | | |
| 1858.5 | 45 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO BKRD-LGIA-MW20

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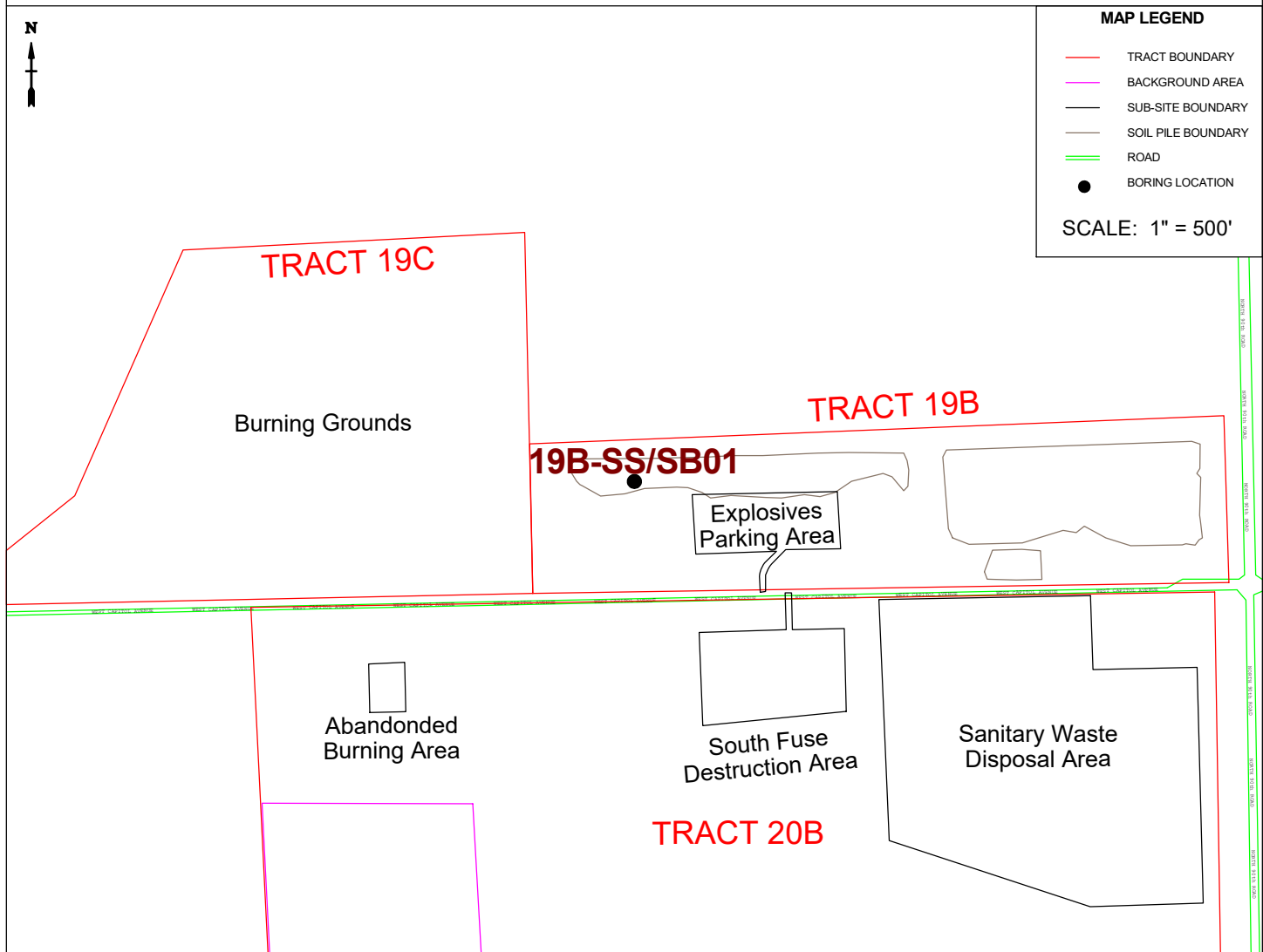
Tract 19B Boring Logs
Soil Samples

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| | | | | | |
|---|-------------------|---|---------------------------------------|---------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19B-SS/SB01 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
6610 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

DPT, 2 inch ID/4 ft long Macro-Core sampler with disposable PVC liners. Rods and sampling equipment was decontaminated before use. 4 inch Nominal borehole diameter. | | 8. HOLE LOCATION
409174.3 North 2049449.8 East | | | |
| | | 9. SURFACE ELEVATION
-- | | | |
| | | 10. DATE STARTED
7/23/2018 | | 11. DATE COMPLETED
7/23/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
N/A | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
N/A | | | |
| 14. TOTAL DEPTH OF HOLE
18.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
2 | VOC
NA | METALS
Method 6020 | OTHER (SPECIFY)
Explosives (8330B) | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
NO | OTHER (SPECIFY)
Soil Boring | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



| | | | |
|---------|------------------------------|---------|-------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 19B-SS/SB01 |
|---------|------------------------------|---------|-------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB01

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| | 1 | | | | | | |
| | 2 | | | | | | |
| | 3 | | | | | | |
| | 4 | | | | | | |
| | 5 | | | | | | |
| | 6 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy. (Grey/cream colored) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
6-8 ft.
100% Rec. | SS | | (Soil Sampled) |
| | 7 | | | | | | |
| | 8 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| | 9 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-SS/SB01

HTRW DRILLING LOG

S. Cameron

19B-SS/SB01

| |
|---------------------|
| SHEET 3 OF 4 SHEETS |
|---------------------|

| | | | |
|---------|------------------------------|---------|-------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 19B-SS/SB01 |
|---------|------------------------------|---------|-------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


19B-SS/SB01

| PROJECT | | DISTRICT | | SHEET | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 4 | | | 4 | | 4 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| | 18 | Bottom of Borehole @ 18 ft | | | | | | | | |
| | 19 | | | | | | | | | |
| | 20 | | | | | | | | | |
| | 21 | | | | | | | | | |
| | 22 | | | | | | | | | |
| | 23 | | | | | | | | | |
| | 24 | | | | | | | | | |
| | 25 | | | | | | | | | |
| | 26 | | | | | | | | | |
| | 27 | | | | | | | | | |

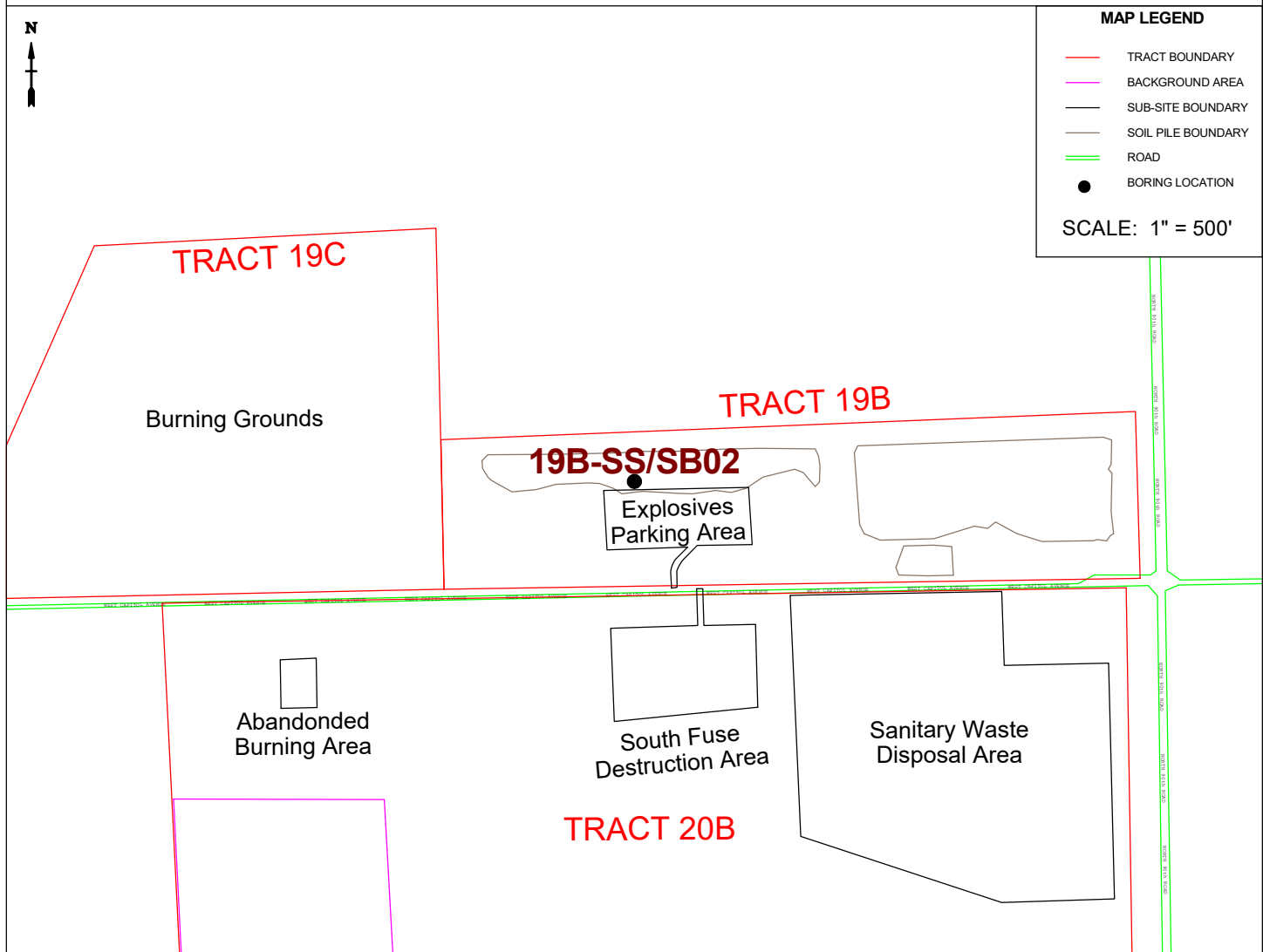
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-SS/SB01

| | | | | | |
|---|-------------------|---|---------------------------------------|--|------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19B-SS/SB02 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
6610 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

DPT, 2 inch ID/4 ft long Macro-Core sampler with disposable PVC liners. Rods and sampling equipment was decontaminated before use. 5 inch Nominal borehole diameter. | | 8. HOLE LOCATION
409161.8 North 2049714.4 East | | | |
| | | 9. SURFACE ELEVATION
-- | | | |
| | | 10. DATE STARTED
7/23/2018 | 11. DATE COMPLETED
7/23/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
N/A | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
N/A | | | |
| 14. TOTAL DEPTH OF HOLE
20.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
2 | VOC
NA | METALS
Method 6021 | OTHER (SPECIFY)
Explosives (8330B) | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
NO | OTHER (SPECIFY)
Soil Boring | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



| | |
|--|------------------------|
| PROJECT CHAAP Grand Island, Nebraska | HOLE NO 19B-SS/SB02 |
|--|------------------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB02

| PROJECT | | DISTRICT | | HOLE NO | | | SHEET | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|--|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 19B-SS/SB02 | | | 2 OF 4 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| | 0 | Pile Material | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery | |
| | 1 | | | | | | | |
| | 2 | | | | | | | |
| | 3 | | | | | | | |
| | 4 | | | | | | | |
| | 5 | | | | | | | |
| | 6 | | | | | | | |
| | 7 | | | | | | | |
| | 8 | | | | | | | |
| | 9 | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-SS/SB02

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB02

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| | 9 | Pile Material (<i>continued</i>) | | | | | |
| | 10 | | | | | | |
| | 11 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
10.5-12.5 ft.
100% Rec. | SS | | (Soil Sampled) |
| | 12 | | | | | | |
| | 13 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| | 14 | | | | | | |
| | 15 | | | | | | |
| | 16 | | | | | | |
| | 17 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
16.5-18.5 ft.
100% Rec. | SB | | (Soil Sampled) |
| | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

19B-SS/SB02

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB02

| PROJECT | | DISTRICT | | SHEET | | | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 4 OF 4 SHEETS | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | 18 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | | |
| | 19 | | | | | | |
| | 20 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2)
Bottom of Borehole @ 20 ft | | | | | |
| | 21 | | | | | | |
| | 22 | | | | | | |
| | 23 | | | | | | |
| | 24 | | | | | | |
| | 25 | | | | | | |
| | 26 | | | | | | |
| | 27 | | | | | | |

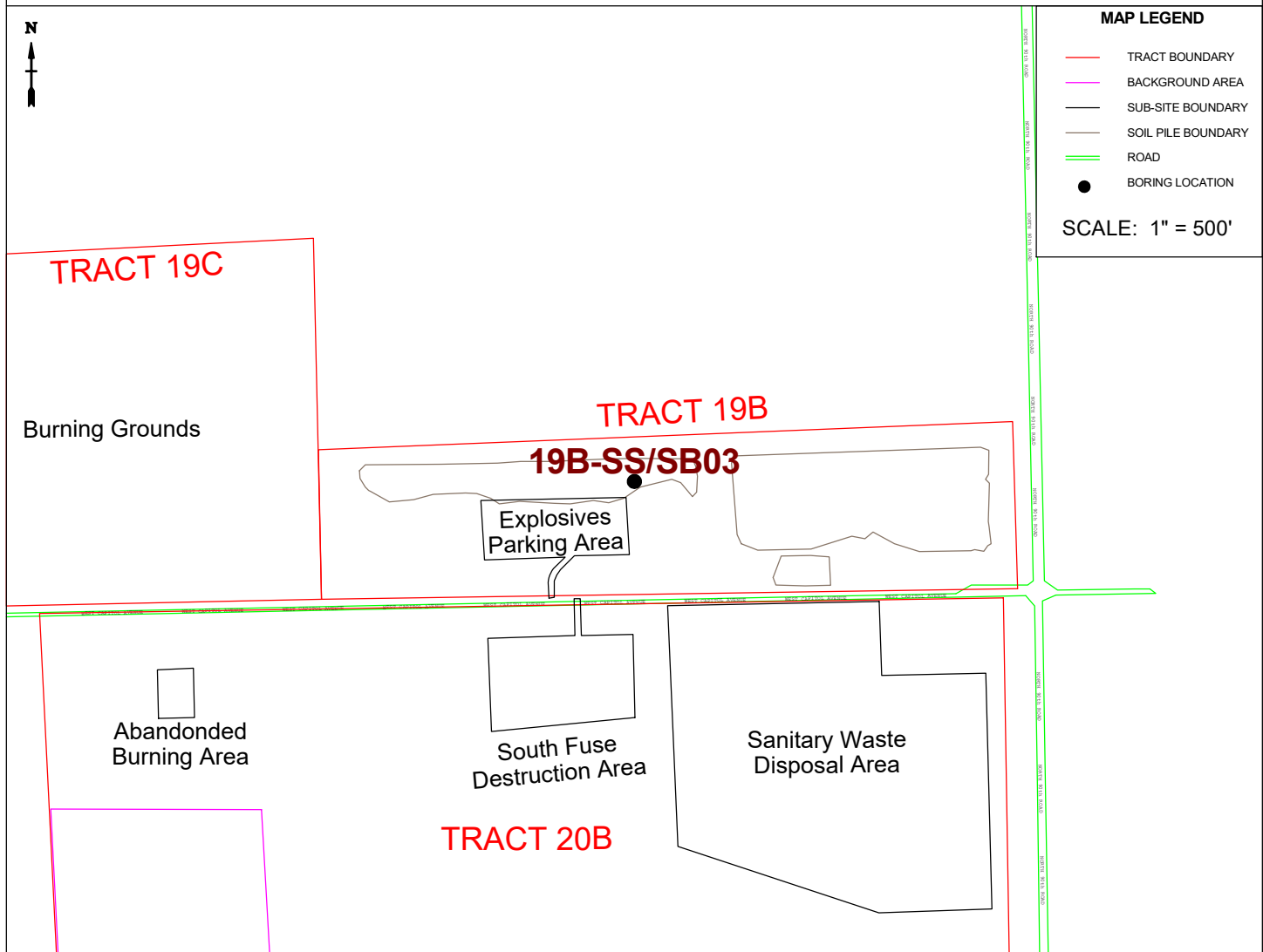
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-SS/SB02

| | | | | | |
|---|-------------------|---|---------------------------------------|---------------------------------|------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19B-SS/SB03 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
6610 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

DPT, 2 inch ID/4 ft long Macro-Core sampler with disposable PVC liners. Rods and sampling equipment was decontaminated before use. 6 inch Nominal borehole diameter. | | 8. HOLE LOCATION
409191.9 North 2050080.6 East | | | |
| | | 9. SURFACE ELEVATION
-- | | | |
| | | 10. DATE STARTED
7/24/2018 | | 11. DATE COMPLETED
7/24/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
N/A | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
N/A | | | |
| 14. TOTAL DEPTH OF HOLE
24.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
2 | VOC
NA | METALS
Method 6022 | OTHER (SPECIFY)
Explosives (8330B) | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
NO | OTHER (SPECIFY)
Soil Boring | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



| | | | |
|---------|------------------------------|---------|-------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 19B-SS/SB03 |
|---------|------------------------------|---------|-------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB03

| PROJECT | | DISTRICT | | FIELD SCREENING RESULTS | | | GEOTECH SAMPLE OR CORE BOX NO. | | ANALYTICAL SAMPLE NO. | | BLOW COUNT | | REMARKS | |
|-------------------------------|--------------|---|--|-------------------------|--|-----|--------------------------------|-----|-----------------------|-----|------------|--|---------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | (d) | | (e) | | (f) | | (g) | | (h) | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | | | | | | | | | | | |
| | 0 | Pile Material | | | | | | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery | | |
| | 1 | | | | | | | | | | | | | |
| | 2 | | | | | | | | | | | | | |
| | 3 | | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | |
| | 9 | | | | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-SS/SB03

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB03

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| | 9 | Pile Material (<i>continued</i>) | | | | | |
| | 10 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
10-12 ft.
100% Rec. | SS | | (Soil Sampled) |
| | 11 | | | | | | |
| | 12 | | | | | | |
| | 13 | | | | | | |
| | 14 | | | | | | |
| | 15 | | | | | | |
| | 16 | | | | | | |
| | 17 | | | | | | |
| | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-SS/SB03

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB03

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 4 OF 4 SHEETS


| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| | 18 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | | |
| | 19 | | | | | | |
| | 20 | | | | | | |
| | 21 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
21-23 ft.
100% Rec. | SB | | (Soil Sampled) |
| | 22 | | | | | | |
| | 23 | | | | | | |
| | 24 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2)
Bottom of Borehole @ 24 ft | | | | | |
| | 25 | | | | | | |
| | 26 | | | | | | |
| | 27 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

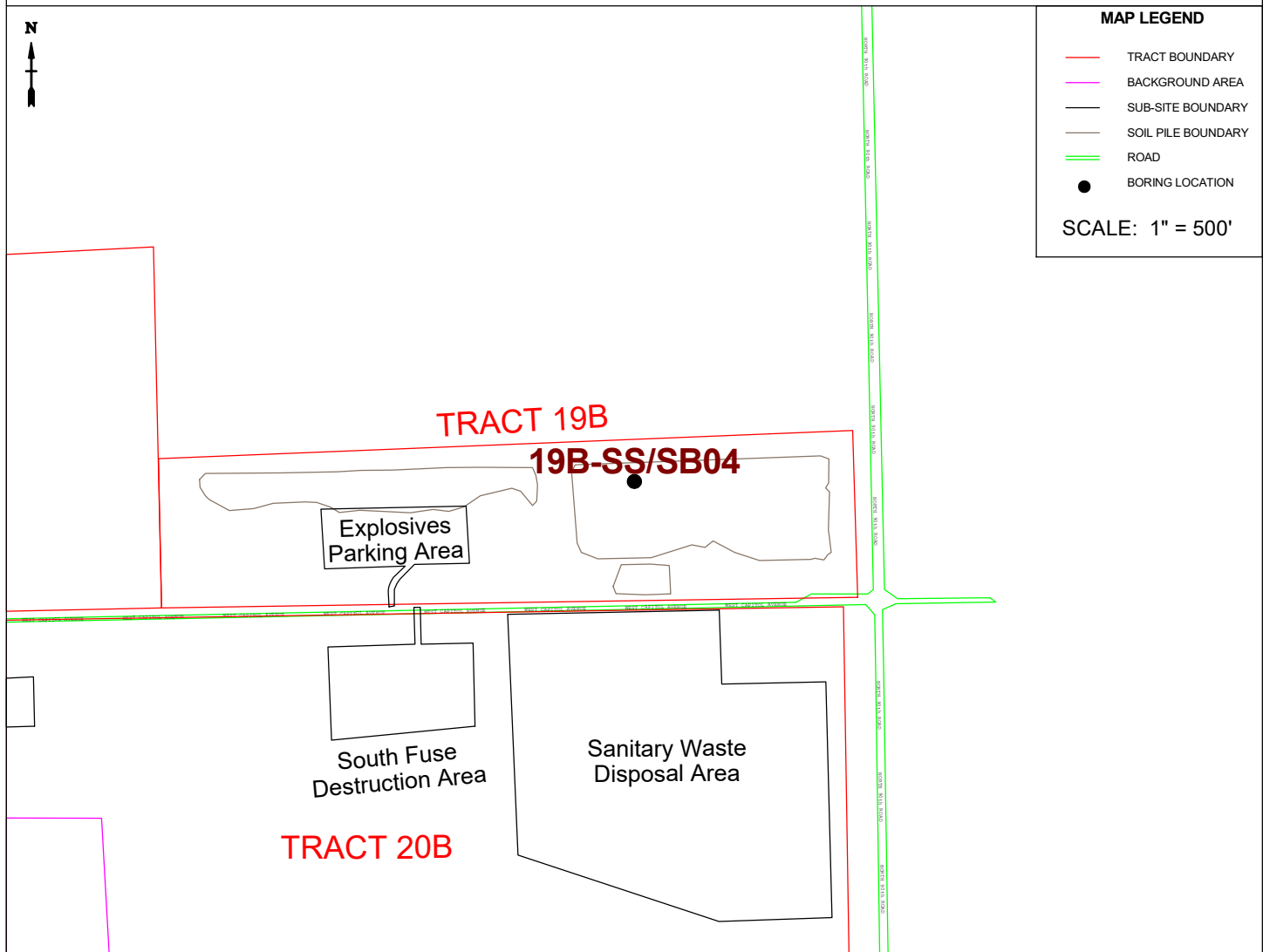
HOLE NO

19B-SS/SB03

| | | | | | |
|---|-------------------|---|---------------------------------------|--|------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19B-SS/SB04 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 5 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
6610 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

DPT, 2 inch ID/4 ft long Macro-Core sampler with disposable PVC liners. Rods and sampling equipment was decontaminated before use. 7 inch Nominal borehole diameter. | | 8. HOLE LOCATION
409218.0 North 2050558.2 East | | | |
| | | 9. SURFACE ELEVATION
-- | | | |
| | | 10. DATE STARTED
7/24/2018 | | 11. DATE COMPLETED
7/24/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
N/A | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
N/A | | | |
| 14. TOTAL DEPTH OF HOLE
28.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
2 | VOC
NA | METALS
Method 6023 | OTHER (SPECIFY)
Explosives (8330B) | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
NO | OTHER (SPECIFY)
Soil Boring | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



| | |
|--|-------------------------|
| PROJECT CHAAP Grand Island, Nebraska | HOLE NO 19B-SS/SB04 |
|--|-------------------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB04

| PROJECT | | DISTRICT | | HOLE NO | | | SHEET | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|--|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 19B-SS/SB04 | | | 2 OF 5 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| | 0 | Pile Material | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery | |
| | 1 | | | | | | | |
| | 2 | | | | | | | |
| | 3 | | | | | | | |
| | 4 | | | | | | | |
| | 5 | | | | | | | |
| | 6 | | | | | | | |
| | 7 | | | | | | | |
| | 8 | | | | | | | |
| | 9 | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-SS/SB04

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB04

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 5 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| | 9 | Pile Material (<i>continued</i>) | | | | | |
| | 10 | | | | | | |
| | 11 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist. | | | | | |
| | 12 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| | 13 | | | | | | |
| | 14 | | | | | | |
| | 15 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
15-17 ft.
100% Rec. | SS | | (Soil Sampled) |
| | 16 | | | | | | |
| | 17 | | | | | | |
| | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

19B-SS/SB04

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB04

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 4 OF 5 SHEETS | |
|--------------|--------------|---|--|-----------------------------------|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| | 18 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | | | | |
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PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-SS/SB04

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


19B-SS/SB04

| PROJECT | | DISTRICT | | FIELD SCREENING RESULTS | | | GEOTECH SAMPLE OR CORE BOX NO. | | ANALYTICAL SAMPLE NO. | | BLOW COUNT | | REMARKS | |
|--------------|--------------|--|--|-------------------------|--|------------------------|--------------------------------|-------------------|-----------------------|--------------|------------|----------------|---------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | RESULTS
(d) | | OR CORE BOX NO.
(e) | | SAMPLE NO.
(f) | | COUNT
(g) | | REMARKS
(h) | | |
| | 27 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | | | | | | | |
| | 28 | | | | | | | | | | | | | |
| | | Bottom of Borehole @ 28 ft | | | | | | | | | | | | |
| | 29 | | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | | |
| | 31 | | | | | | | | | | | | | |
| | 32 | | | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | | |
| | 34 | | | | | | | | | | | | | |
| | 35 | | | | | | | | | | | | | |
| | 36 | | | | | | | | | | | | | |

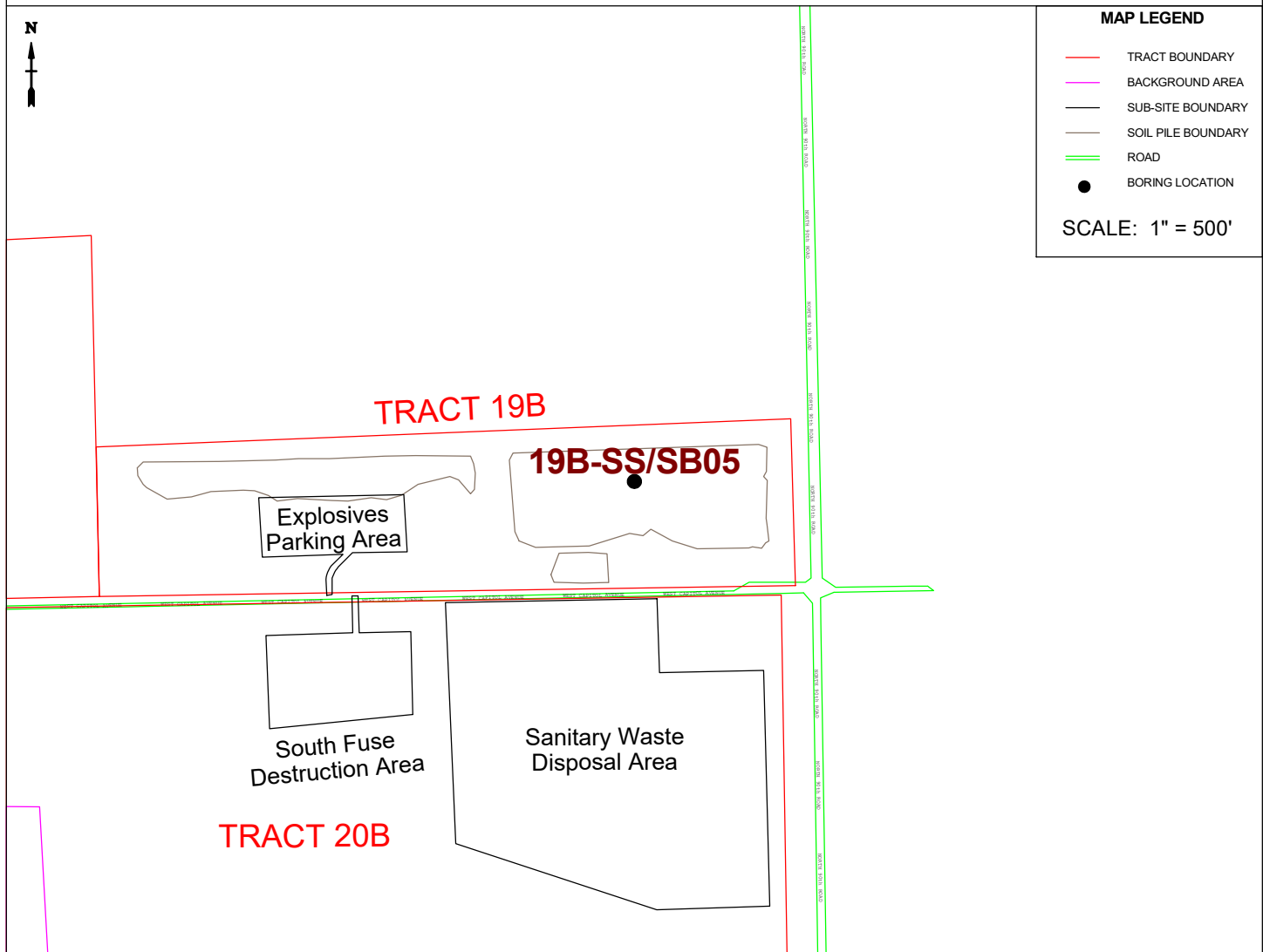
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-SS/SB04

| | | | | | | |
|---|--|-------------------|---|--------------------------------|---------------------------------|---|
| HTRW DRILLING LOG | | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19B-SS/SB05 | |
| 1. COMPANY NAME
ATI / HGL | | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 SHEETS |
| 3. PROJECT
CHAAP | | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
6610 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

DPT, 2 inch ID/4 ft long Macro-Core sampler with disposable PVC liners. Rods and sampling equipment was decontaminated before use. 8 inch Nominal borehole diameter. | | | 8. HOLE LOCATION
409183.4 North 2050743.8 East | | | |
| | | | 9. SURFACE ELEVATION
-- | | | |
| | | | 10. DATE STARTED
7/24/2018 | | 11. DATE COMPLETED
7/24/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | | 15. DEPTH GROUNDWATER ENCOUNTERED
N/A | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
N/A | | | |
| 14. TOTAL DEPTH OF HOLE
24.0 Feet Below the Ground Surface | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | | DISTURBED
N/A | | UNDISTURBED
N/A | | 19. TOTAL NUMBER OF CORE BOXES
--- |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
2 | | VOC
NA | | METALS
Method 6024 | | OTHER (SPECIFY)
Explosives (8330B) |
| | | | | OTHER (SPECIFY)
NA | | OTHER (SPECIFY)
NA |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | | BACKFILLED
N/A | | MONITORING WELL
NO | | 21. TOTAL CORE RECOVERY
N/A % |
| | | | | OTHER (SPECIFY)
Soil Boring | | 23. SIGNATURE OF INSPECTOR
 |

LOCATION SKETCH/COMMENTS



| | | | |
|---------|------------------------------|---------|-------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 19B-SS/SB05 |
|---------|------------------------------|---------|-------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB05

| PROJECT | | DISTRICT | | FIELD SCREENING RESULTS | | | GEOTECH SAMPLE OR CORE BOX NO. | | ANALYTICAL SAMPLE NO. | | BLOW COUNT | | REMARKS | |
|--------------|--------------|---------------------------------|--|-------------------------|--|------------------------|--------------------------------|-------------------|-----------------------|--------------|------------|----------------|--|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | RESULTS
(d) | | OR CORE BOX NO.
(e) | | SAMPLE NO.
(f) | | COUNT
(g) | | REMARKS
(h) | | |
| | 0 | Pile Material | | | | | | | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery | |
| | 1 | | | | | | | | | | | | | |
| | 2 | | | | | | | | | | | | | |
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PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-SS/SB05

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB05

| PROJECT | | DISTRICT | | HOLE NUMBER | | | SHEET | |
|-------------------------------|--------------|--|--|--|---------------------------------|-------------------|----------------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 19B-SS/SB05 | | | 3 OF 4 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| | 9 | Pile Material (<i>continued</i>) | | | | | | |
| | 10 | | | | | | | |
| | 11 | | | | | | | |
| | 12 | | | | | | | |
| | 13 | | | | | | | |
| | 14 | | | | | | | |
| | 15 | | | | | | | |
| | 16 | | | | | | | |
| | 17 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
17-19 ft.
100% Rec. | SS | | (Soil Sampled) | |
| | 18 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist. | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-SS/SB05

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB05

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 4 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| | 18 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist. (continued) | | | | | |
| | 19 | | | | | | |
| | 20 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| | 21 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
20-22 ft.
100% Rec. | SB | | (Soil Sampled) |
| | 22 | | | | | | |
| | 23 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | |
| | 24 | Bottom of Borehole @ 24 ft | | | | | |
| | 25 | | | | | | |
| | 26 | | | | | | |
| | 27 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

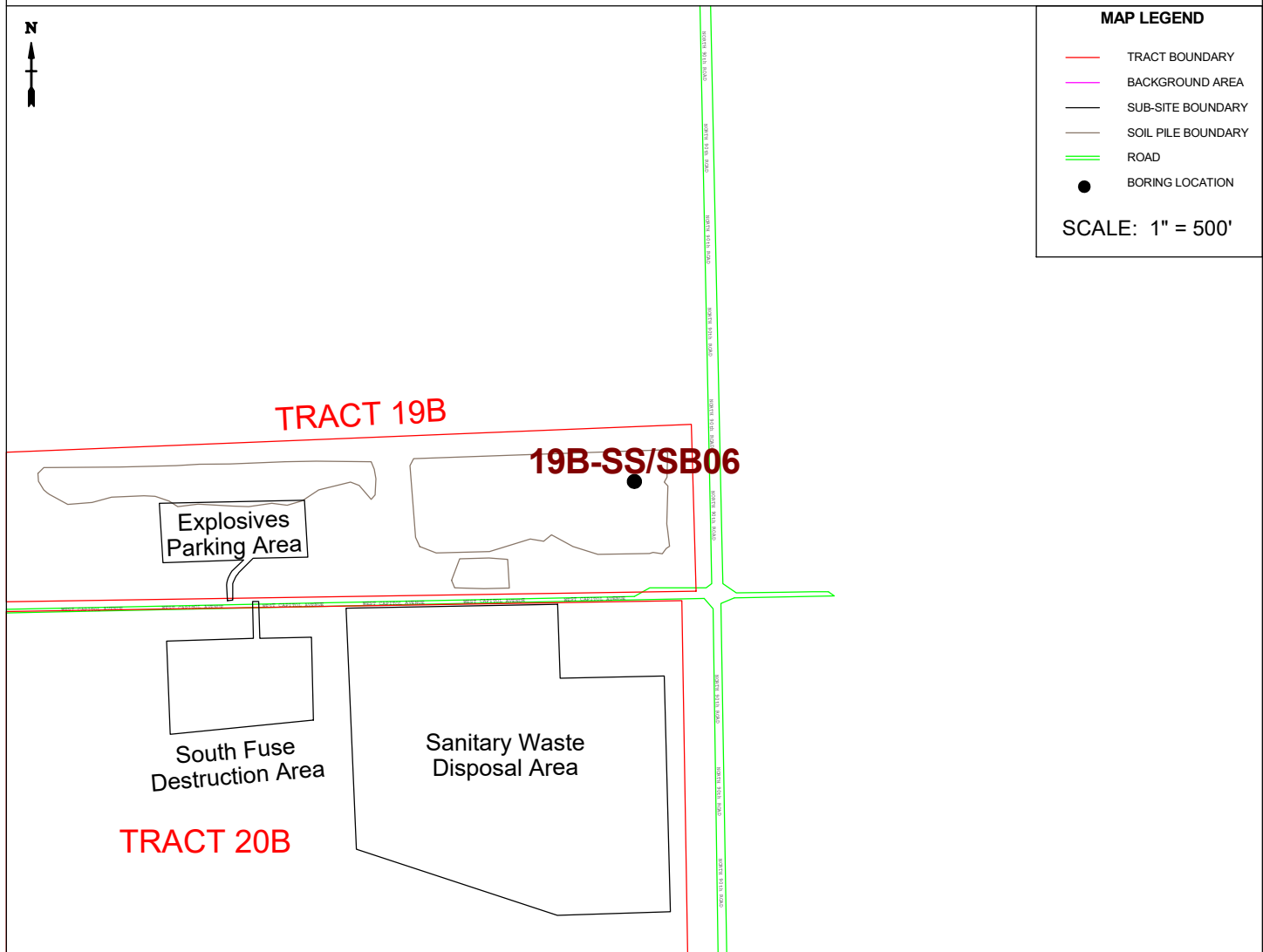
HOLE NO

19B-SS/SB05

| | | | | | | | | | |
|---|--|-----------------------|---|-----------------------|--|---------------------------------------|-----------------|-----------------------|--|
| HTRW DRILLING LOG | | | DISTRICT
US Army Corps of Engineers - Omaha District | | | HOLE NUMBER
19B-SS/SB06 | | | |
| 1. COMPANY NAME
ATI / HGL | | | 2. DRILLING CONTRACTOR
GSI | | | | SHEET
1 OF 5 | | |
| 3. PROJECT
CHAAP | | | 4. LOCATION
Grand Island, Nebraska | | | | | | |
| 5. NAME OF DRILLER
J. Tinnell | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
6610 Geoprobe | | | | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

DPT, 2 inch ID/4 ft long Macro-Core sampler with disposable PVC liners. Rods and sampling equipment was decontaminated before use. 9 inch Nominal borehole diameter. | | | 8. HOLE LOCATION
409200.0 North 2051040.5 East | | | | | | |
| | | | 9. SURFACE ELEVATION
-- | | | | | | |
| | | | 10. DATE STARTED
7/25/2018 | | | 11. DATE COMPLETED
7/25/2018 | | | |
| 12. OVERBURDEN THICKNESS
N/A | | | 15. DEPTH GROUNDWATER ENCOUNTERED
N/A | | | | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
N/A | | | | | | |
| 14. TOTAL DEPTH OF HOLE
28.0 Feet Below the Ground Surface | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | | | | |
| 18. GEOTECHNICAL SAMPLES
0 | | DISTURBED
N/A | | UNDISTURBED
N/A | | 19. TOTAL NUMBER OF CORE BOXES
--- | | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
2 | | VOC
NA | | METALS
Method 6025 | | OTHER (SPECIFY)
Explosives (8330B) | | OTHER (SPECIFY)
NA | |
| 21. TOTAL CORE RECOVERY
N/A % | | OTHER (SPECIFY)
NA | | OTHER (SPECIFY)
NA | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | | BACKFILLED
N/A | | MONITORING WELL
NO | | 23. SIGNATURE OF INSPECTOR | | | |
| | | | | | | Soil Boring | | | |

LOCATION SKETCH/COMMENTS



| | | | |
|---------|------------------------------|---------|-------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 19B-SS/SB06 |
|---------|------------------------------|---------|-------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB06

| PROJECT | | DISTRICT | | FIELD SCREENING RESULTS | | | GEOTECH SAMPLE OR CORE BOX NO. | | ANALYTICAL SAMPLE NO. | | BLOW COUNT | | REMARKS | |
|-------------------------------|--------------|---|--|-------------------------|--|-----|--------------------------------|-----|-----------------------|-----|------------|--|---------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | (d) | | (e) | | (f) | | (g) | | (h) | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | | | | | | | | | | | |
| | 0 | Pile Material | | | | | | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery | | |
| | 1 | | | | | | | | | | | | | |
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PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-SS/SB06

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB06

| PROJECT | | DISTRICT | | SHEET | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|--------|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 3 | | 5 | | SHEETS | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| | 9 | Pile Material <i>(continued)</i> | | | | | | | | |
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PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-SS/SB06

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB06

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 4 OF 5 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| | 18 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | | |
| | 19 | | | | | | |
| | 20 | | | | | | |
| | 21 | | | | | | |
| | 22 | | | | | | |
| | 22 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
22-24 ft.
100% Rec. | SB | | (Soil Sampled) |
| | 23 | | | | | | |
| | 24 | | | | | | |
| | 25 | | | | | | |
| | 26 | | | | | | |
| | 27 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-SS/SB06

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB06

| PROJECT | | DISTRICT | | HOLE NO | | | SHEET | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 19B-SS/SB06 | | | 5 OF 5 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| | 27 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | |
| | 28 | Bottom of Borehole @ 28 ft | | | | | | |
| | 29 | | | | | | | |
| | 30 | | | | | | | |
| | 31 | | | | | | | |
| | 32 | | | | | | | |
| | 33 | | | | | | | |
| | 34 | | | | | | | |
| | 35 | | | | | | | |
| | 36 | | | | | | | |

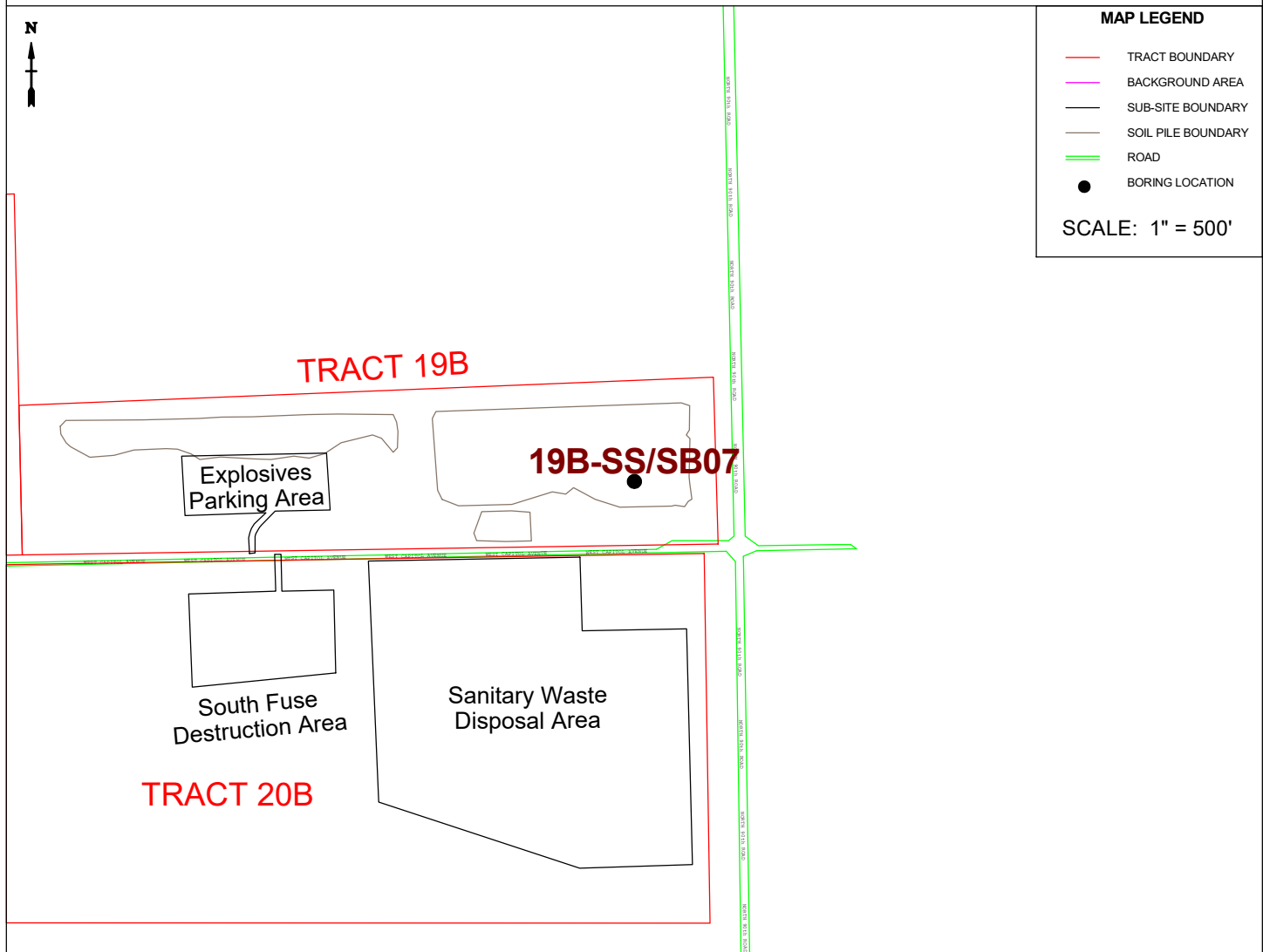
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-SS/SB06

| | | | | | |
|--|-------------------|---|---------------------------------------|----------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19B-SS/SB07 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 3 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
6610 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

DPT, 2 inch ID/4 ft long Macro-Core sampler with disposable PVC liners. Rods and sampling equipment was decontaminated before use. 10 inch Nominal borehole diameter. | | 8. HOLE LOCATION
409059.1 North 2050974.2 East | | | |
| | | 9. SURFACE ELEVATION
-- | | | |
| | | 10. DATE STARTED
7/24/2018 | | 11. DATE COMPLETED
7/24/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
N/A | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
N/A | | | |
| 14. TOTAL DEPTH OF HOLE
12.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
2 | VOC
NA | METALS
Method 6026 | OTHER (SPECIFY)
Explosives (8330B) | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
NO | OTHER (SPECIFY)
Soil Boring | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



| | | | |
|---------|------------------------------|---------|-------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 19B-SS/SB07 |
|---------|------------------------------|---------|-------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB07

| PROJECT | CHAAP, Grand Island, Nebraska | DISTRICT | US Army Corps of Engineers - Omaha District | | | | SHEET 2 OF 3 SHEETS |
|--------------|-------------------------------|---|---|--|---------------------------------|-------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | 0 | Pile Material | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| | 1 | | | | | | |
| | 2 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist. | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
2-4 ft.
100% Rec. | SS | | (Soil Sampled) |
| | 3 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| | 4 | | | | | | |
| | 5 | | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |
| | 8 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
8-10 ft.
100% Rec. | SB | | (Soil Sampled) |
| | 9 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-SS/SB07

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB07

| PROJECT | | DISTRICT | | HOLE NO. | | | SHEET | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 19B-SS/SB07 | | | 3 OF 3 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | | | |
| | 10 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | |
| | 11 | | | | | | | |
| | 12 | Bottom of Borehole @ 12 ft | | | | | | |
| | 13 | | | | | | | |
| | 14 | | | | | | | |
| | 15 | | | | | | | |
| | 16 | | | | | | | |
| | 17 | | | | | | | |
| | 18 | | | | | | | |

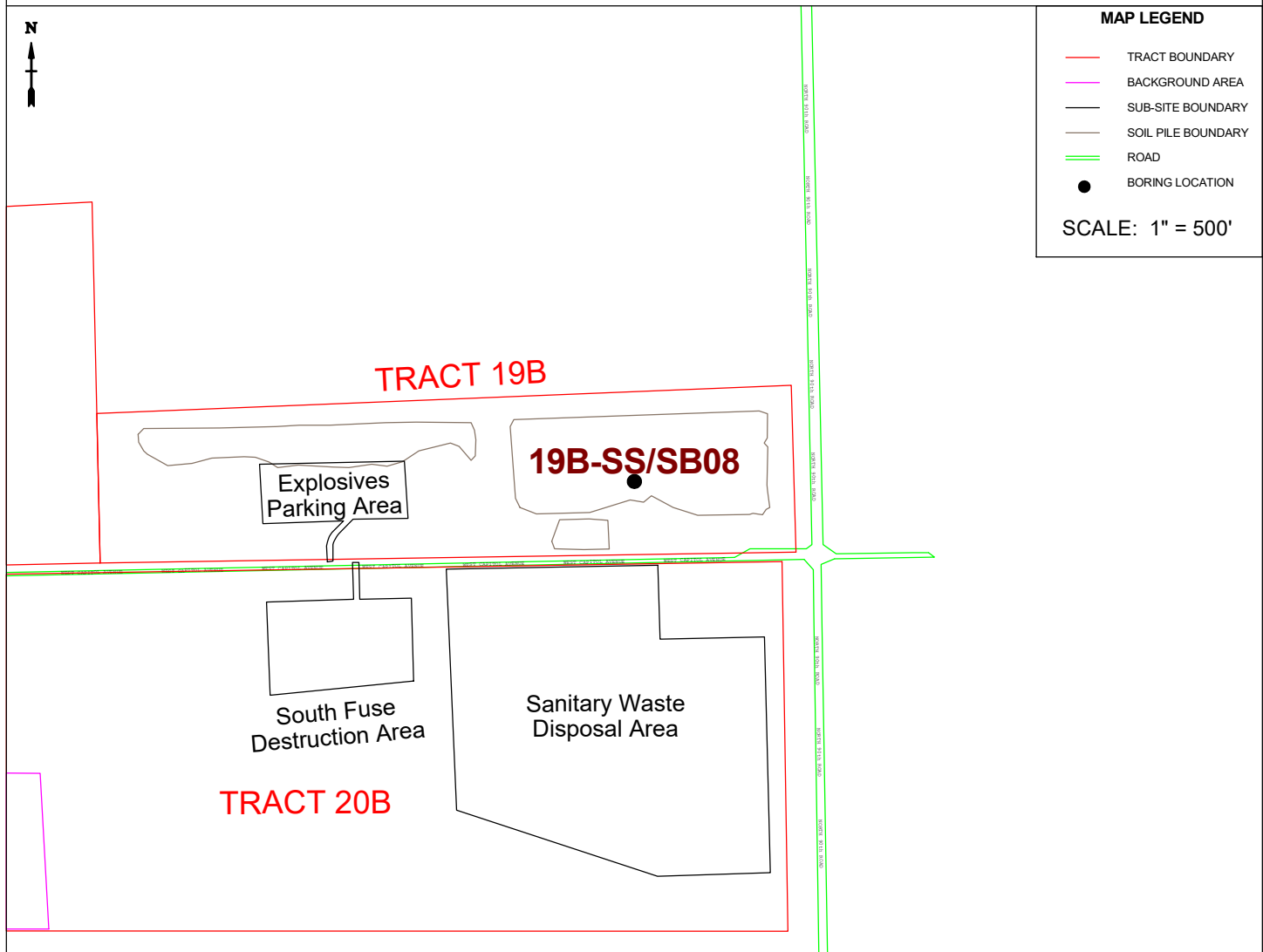
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-SS/SB07

| | | | | | |
|--|-------------------|---|---------------------------------------|----------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19B-SS/SB08 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 3 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
6610 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

DPT, 2 inch ID/4 ft long Macro-Core sampler with disposable PVC liners. Rods and sampling equipment was decontaminated before use. 11 inch Nominal borehole diameter. | | 8. HOLE LOCATION
409083.4 North 2050741.7 East | | | |
| | | 9. SURFACE ELEVATION
-- | | | |
| | | 10. DATE STARTED
7/24/2018 | 11. DATE COMPLETED
7/24/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
N/A | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
N/A | | | |
| 14. TOTAL DEPTH OF HOLE
16.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
2 | VOC
NA | METALS
Method 6027 | OTHER (SPECIFY)
Explosives (8330B) | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
NO | OTHER (SPECIFY)
Soil Boring | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



| | | | |
|---------|------------------------------|---------|-------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 19B-SS/SB08 |
|---------|------------------------------|---------|-------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB08

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 3 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| | 0 | Pile Material | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| | 1 | | | | | | |
| | 2 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist. | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
2-4 ft.
100% Rec. | SS | | (Soil Sampled) |
| | 3 | | | | | | |
| | 4 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| | 5 | | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |
| | 8 | | | | | | |
| | 9 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

19B-SS/SB08

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


19B-SS/SB08

| PROJECT | | DISTRICT | | SHEET | | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|----------------|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 3 | | | 3 | | 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | | (Soil Sampled) | | | |
| | 10 | | | | | | | | | |
| | 11 | | | | | | | | | |
| | 12 | | | | | | | | | |
| | 13 | | | | | | | | | |
| | 14 | | | | | | | | | |
| | 15 | | | | | | | | | |
| | 16 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2)
Bottom of Borehole @ 16 ft | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
12-14 ft.
100% Rec. | SB | | | | | |
| | 17 | | | | | | | | | |
| | 18 | | | | | | | | | |

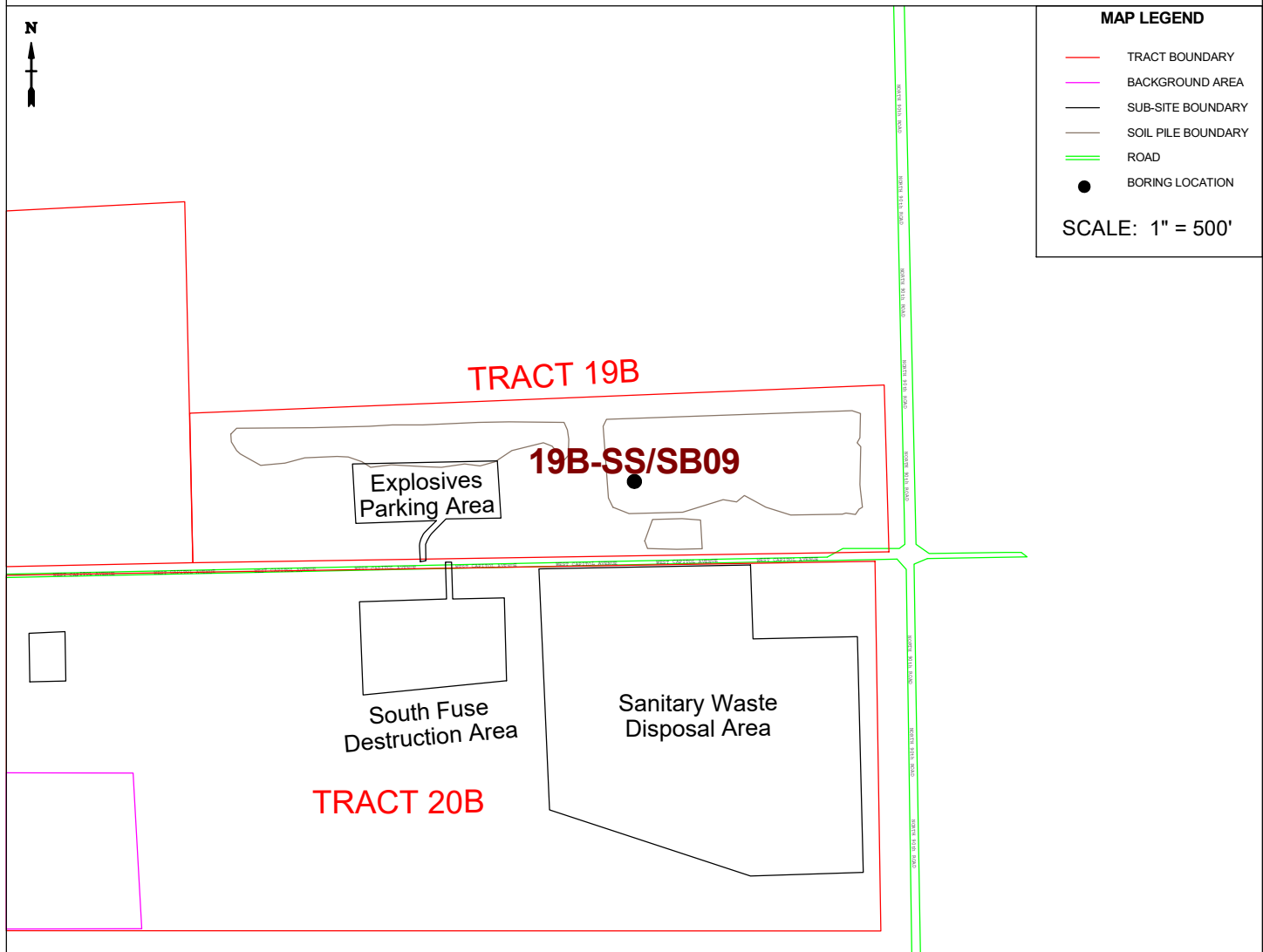
(SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2)

Bottom of Borehole @ 16 ft

| | | | | | |
|--|-------------------|---|---------------------------------------|--|------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19B-SS/SB09 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
6610 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

DPT, 2 inch ID/4 ft long Macro-Core sampler with disposable PVC liners. Rods and sampling equipment was decontaminated before use. 12 inch Nominal borehole diameter. | | 8. HOLE LOCATION
409082.6 North 2050464.4 East | | | |
| | | 9. SURFACE ELEVATION
-- | | | |
| | | 10. DATE STARTED
7/24/2018 | 11. DATE COMPLETED
7/24/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
N/A | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
N/A | | | |
| 14. TOTAL DEPTH OF HOLE
20.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
2 | VOC
NA | METALS
Method 6028 | OTHER (SPECIFY)
Explosives (8330B) | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
NO | OTHER (SPECIFY)
Soil Boring | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



| | |
|--|-------------------------|
| PROJECT CHAAP Grand Island, Nebraska | HOLE NO 19B-SS/SB09 |
|--|-------------------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB09

| PROJECT | | DISTRICT | | HOLE NUMBER | | | SHEET | |
|-------------------------------|--------------|--|--|--|---------------------------------|-------------------|----------------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 19B-SS/SB09 | | | 2 OF 4 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| | 0 | Pile Material | | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| | 1 | | | | | | | |
| | 2 | | | | | | | |
| | 3 | | | | | | | |
| | 4 | | | | | | | |
| | 5 | | | | | | | |
| | 6 | | | | | | | |
| | 7 | | | | | | | |
| | 8 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist. | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
8-10 ft.
100% Rec. | | SS | | (Soil Sampled) |
| | 9 | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-SS/SB09

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB09

| PROJECT | | DISTRICT | | SHEET | | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|----------------|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 3 | | | 4 | | SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | | | | | |
| | 10 | | | | | | | | | |
| | 11 | | | | | | | | | |
| | 12 | | | | | | | | | |
| | 13 | | | | | | | | | |
| | 14 | | | | | | | | | |
| | 15 | | | | | | | | | |
| | 16 | | | | | | | | | |
| | 17 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
17-19 ft.
100% Rec. | SB | | (Soil Sampled) | | | |
| | 18 | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-SS/SB09

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


19B-SS/SB09

| PROJECT | | DISTRICT | | HOLE NO | | | SHEET | |
|-------------------------------|----------------------------|--|-----------------------------------|--|---------------------------------|-------------------|----------------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 19B-SS/SB09 | | | 4 OF 4 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | |
| | 19 | | | | | | | |
| | 20 | | | | | | | |
| | Bottom of Borehole @ 20 ft | | | | | | | |
| | 21 | | | | | | | |
| | 22 | | | | | | | |
| | 23 | | | | | | | |
| | 24 | | | | | | | |
| | 25 | | | | | | | |
| | 26 | | | | | | | |
| | 27 | | | | | | | |

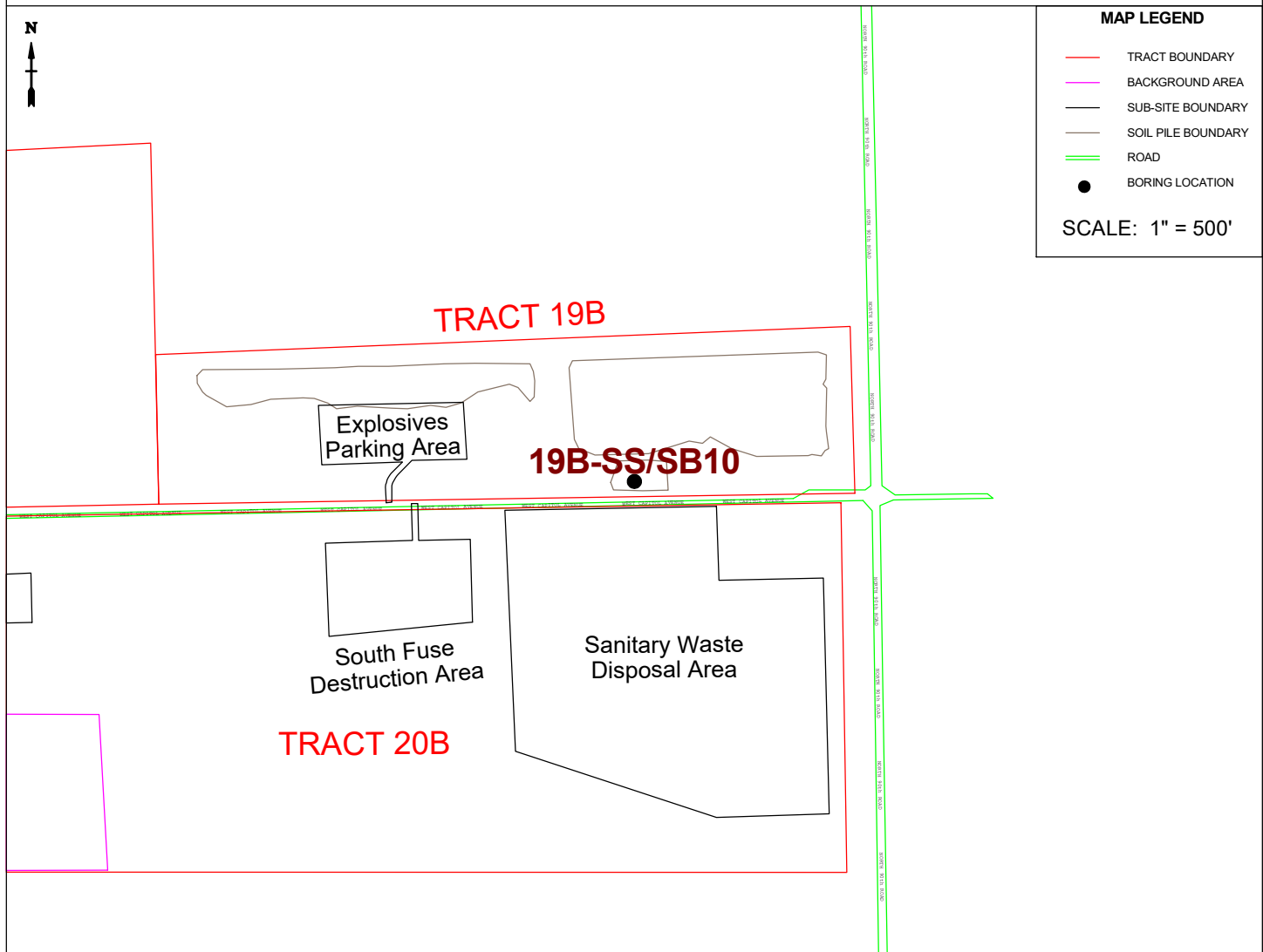
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-SS/SB09

| | | | | | |
|--|-------------------|---|---------------------------------------|--|------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19B-SS/SB10 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 3 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
6610 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

DPT, 2 inch ID/4 ft long Macro-Core sampler with disposable PVC liners. Rods and sampling equipment was decontaminated before use. 13 inch Nominal borehole diameter. | | 8. HOLE LOCATION
408907.5 North 2050566.0 East | | | |
| | | 9. SURFACE ELEVATION
-- | | | |
| | | 10. DATE STARTED
7/24/2018 | 11. DATE COMPLETED
7/24/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
N/A | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
N/A | | | |
| 14. TOTAL DEPTH OF HOLE
14.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
2 | VOC
NA | METALS
Method 6029 | OTHER (SPECIFY)
Explosives (8330B) | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
NO | OTHER (SPECIFY)
Soil Boring | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



| | |
|--|-------------------------|
| PROJECT CHAAP Grand Island, Nebraska | HOLE NO 19B-SS/SB10 |
|--|-------------------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB10

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 3 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| | 0 | Pile Material | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| | 1 | | | | | | |
| | 2 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist. | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
2-4 ft.
100% Rec. | SS | | (Soil Sampled) |
| | 3 | | | | | | |
| | 4 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| | 5 | | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |
| | 8 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
8-10 ft.
100% Rec. | SB | | (Soil Sampled) |
| | 9 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-SS/SB10

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-SS/SB10


| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 3 | | | | 3 | | SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | | | | | | |
| | 10 | | | | | | | | | | |
| | 11 | | | | | | | | | | |
| | 12 | | | | | | | | | | |
| | 13 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | | | | |
| | 14 | Bottom of Borehole @ 14 ft | | | | | | | | | |
| | 15 | | | | | | | | | | |
| | 16 | | | | | | | | | | |
| | 17 | | | | | | | | | | |
| | 18 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

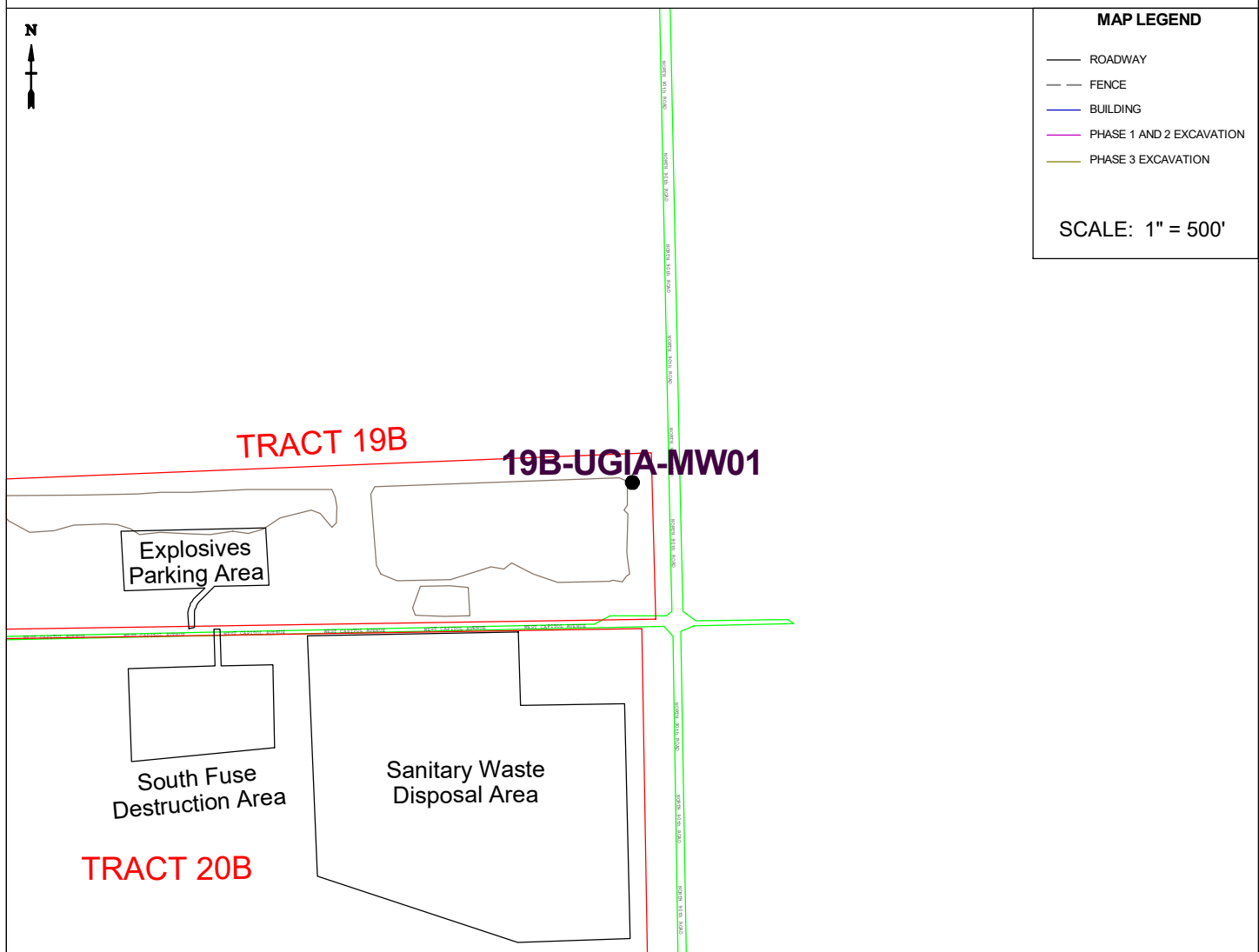
HOLE NO 19B-SS/SB10

**Tract 19B Boring Logs
Monitoring Wells**

| | | | | | |
|--|-------------------|---|---------------------------------------|--|------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19B-UGIA-MW01 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
M. Wold | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 45 | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
409281.0 North 2051153.7 East | | | |
| | | 9. SURFACE ELEVATION
1902.9' MSL | | | |
| | | 10. DATE STARTED
9/24/2018 | 11. DATE COMPLETED
9/24/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
12.45 ft on 9/25/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
19.7 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
12.68 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



| | | | |
|---------|------------------------------|---------|---------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 19B-UGIA-MW01 |
|---------|------------------------------|---------|---------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-UGIA-MW01

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1902.9 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1901.9 | 1 | | | | | | |
| 1900.9 | 2 | (CL) LEAN CLAY (90%): Low plasticity, very slightly moist, low dry strength, low toughness, 10% fine sand, no dilatancy. (2.5Y 3/1) | | | | | |
| 1899.9 | 3 | | | | | | |
| 1898.9 | 4 | | | | | | |
| 1897.9 | 5 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
5-7 ft.
5% Rec. | | 1 | |
| 1896.9 | 6 | | | | | 1 | |
| | | | | | | 2 | |
| | | | | | | 2 | |
| 1895.9 | 7 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy. (10GY 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
7-9 ft.
5% Rec. | | 2 | |
| 1894.9 | 8 | | | | | 1 | |
| | | | | | | 1 | |
| | | | | | | 3 | |
| 1893.9 | 9 | | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

19B-UGIA-MW01

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-UGIA-MW01

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1893.9 | 9 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy. (10GY 4/1) <i>(continued)</i> | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
9-11 ft.
5% Rec. | | 2 | |
| | | | | | | 1 | |
| 1892.9 | 10 | | | | | 2 | |
| | | | | | | 1 | |
| 1891.9 | 11 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
11-13 ft.
100% Rec. | | 8 | |
| | | | | | | 11 | |
| 1890.9 | 12 | | | | | 14 | |
| | | | | | | 16 | |
| 1889.9 | 13 | | | | | | |
| 1888.9 | 14 | | | | | | |
| 1887.9 | 15 | | | | | | |
| 1886.9 | 16 | | | | | | |
| 1885.9 | 17 | | | | | | |
| 1884.9 | 18 | | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

19B-UGIA-MW01

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-UGIA-MW01

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 4 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1884.9 | 18 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
18-19.5 ft.
100% Rec. | | 10 | |
| | | | | | | 11 | |
| 1883.9 | 19 | | | | | 8 | |
| | | | | | | 10 | |
| 1882.9 | 20 | Bottom of Borehole @ 19.7 ft
10 Gallons of Water Lost During Drilling
Heaving Sands 11.23-19.7 ft
Monitoring Well Materials:
250 Lbs #1 Silica Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | |
| 1881.9 | 21 | | | | | | |
| 1880.9 | 22 | | | | | | |
| 1879.9 | 23 | | | | | | |
| 1878.9 | 24 | | | | | | |
| 1877.9 | 25 | | | | | | |
| 1876.9 | 26 | | | | | | |
| 1875.9 | 27 | | | | | | |

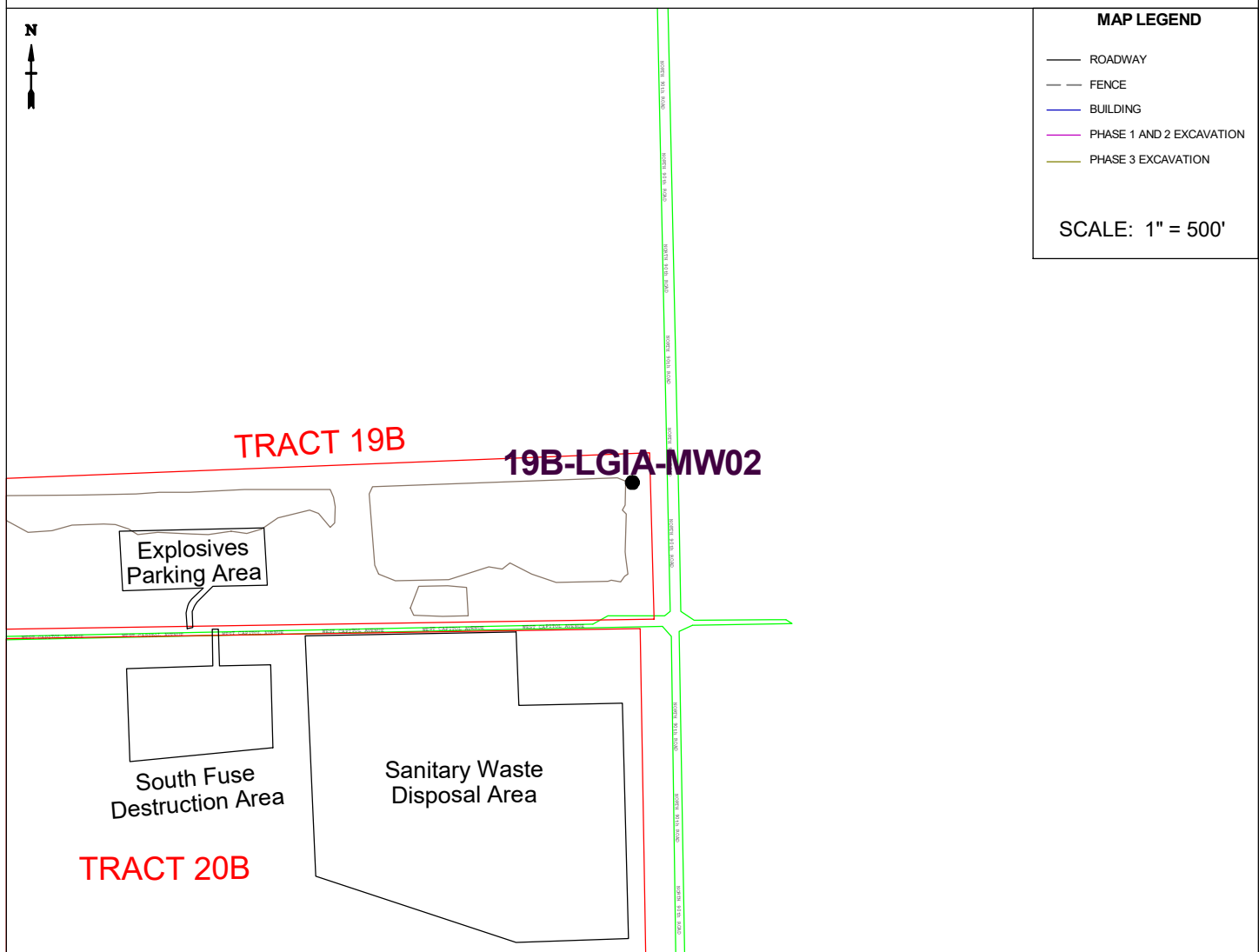
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-UGIA-MW01

| | | | | | |
|--|-------------------|---|---------------------------------------|------------------------------|------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19B-LGIA-MW02 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 6 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
M. Wold | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 45 | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
409280.9 North 2051159.1 East | | | |
| | | 9. SURFACE ELEVATION
1902.7' MSL | | | |
| | | 10. DATE STARTED
9/24/2018 | 11. DATE COMPLETED
9/24/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
12.58 ft on 9/25/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
37.2 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
12.46ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



| | | | |
|---------|------------------------------|---------|---------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 19B-LGIA-MW02 |
|---------|------------------------------|---------|---------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-LGIA-MW02

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1902.7 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1901.7 | 1 | | | | | | |
| 1900.7 | 2 | (CL) LEAN CLAY (90%): Low plasticity, very slightly moist, low dry strength, low toughness, 10% fine sand, no dilatancy. (2.5Y 3/1) | | | | | |
| 1899.7 | 3 | | | | | | |
| 1898.7 | 4 | | | | | | |
| 1897.7 | 5 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
5-7 ft.
5% Rec. | | 1 | |
| 1896.7 | 6 | | | | | 1 | |
| | | | | | | 2 | |
| | | | | | | 2 | |
| 1895.7 | 7 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy. (10GY 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
7-9 ft.
5% Rec. | | 2 | |
| 1894.7 | 8 | | | | | 1 | |
| | | | | | | 1 | |
| | | | | | | 3 | |
| 1893.7 | 9 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

19B-LGIA-MW02

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-LGIA-MW02

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1893.7 | 9 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy. (10GY 4/1) <i>(continued)</i> | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
9-11 ft.
5% Rec. | | 2 | |
| | | | | | | 1 | |
| 1892.7 | 10 | | | | | 2 | |
| | | | | | | 1 | |
| 1891.7 | 11 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
11-13 ft.
100% Rec. | | 8 | |
| | | | | | | 11 | |
| 1890.7 | 12 | | | | | 14 | |
| | | | | | | 16 | |
| 1889.7 | 13 | | | | | | |
| 1888.7 | 14 | | | | | | |
| 1887.7 | 15 | | | | | | |
| 1886.7 | 16 | | | | | | |
| 1885.7 | 17 | | | | | | |
| 1884.7 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-LGIA-MW02

HTRW DRILLING LOG

S. Cameron

| | |
|-------------|---------------|
| HOLE NUMBER | 19B-LGIA-MW02 |
|-------------|---------------|

| | |
|----------|---|
| DISTRICT | US Army Corps of Engineers - Omaha District |
|----------|---|

| |
|---------------------|
| SHEET 4 OF 6 SHEETS |
|---------------------|

| | | | |
|---------|------------------------------|---------|---------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 19B-LGIA-MW02 |
|---------|------------------------------|---------|---------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-LGIA-MW02

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 5 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1875.7 | 27 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | |
| 1874.7 | 28 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 7
28-30 ft.
100% Rec. | | 5 | |
| | | | | | | 8 | |
| 1873.7 | 29 | | | | | 9 | |
| | | | | | | 8 | |
| 1872.7 | 30 | | | | | | |
| 1871.7 | 31 | | | | | | |
| 1870.7 | 32 | | | | | | |
| 1869.7 | 33 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 8
33-35 ft.
100% Rec. | | 7 | |
| | | | | | | 8 | |
| 1868.7 | 34 | | | | | 11 | |
| | | | | | | 13 | |
| 1867.7 | 35 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 9
35-37 ft.
100% Rec. | | 4 | |
| | | | | | | 4 | |
| 1866.7 | 36 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-LGIA-MW02

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-LGIA-MW02

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 6 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|
| 1866.7 | 36 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | 6 | |
| 1865.7 | 37 | (CL) LEAN CLAY (90%): Low to medium
plasticity, moist, high dry strength, medium
toughness, 10% fine sand, no dilatancy. (10GY
4/1) | | | | 5 | |
| 1864.7 | 38 | Bottom of Borehole @ 37.2 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 11.23-37 ft
Monitoring Well Materials:
250 Lbs #1 Silica Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | |
| 1863.7 | 39 | | | | | | |
| 1862.7 | 40 | | | | | | |
| 1861.7 | 41 | | | | | | |
| 1860.7 | 42 | | | | | | |
| 1859.7 | 43 | | | | | | |
| 1858.7 | 44 | | | | | | |
| 1857.7 | 45 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

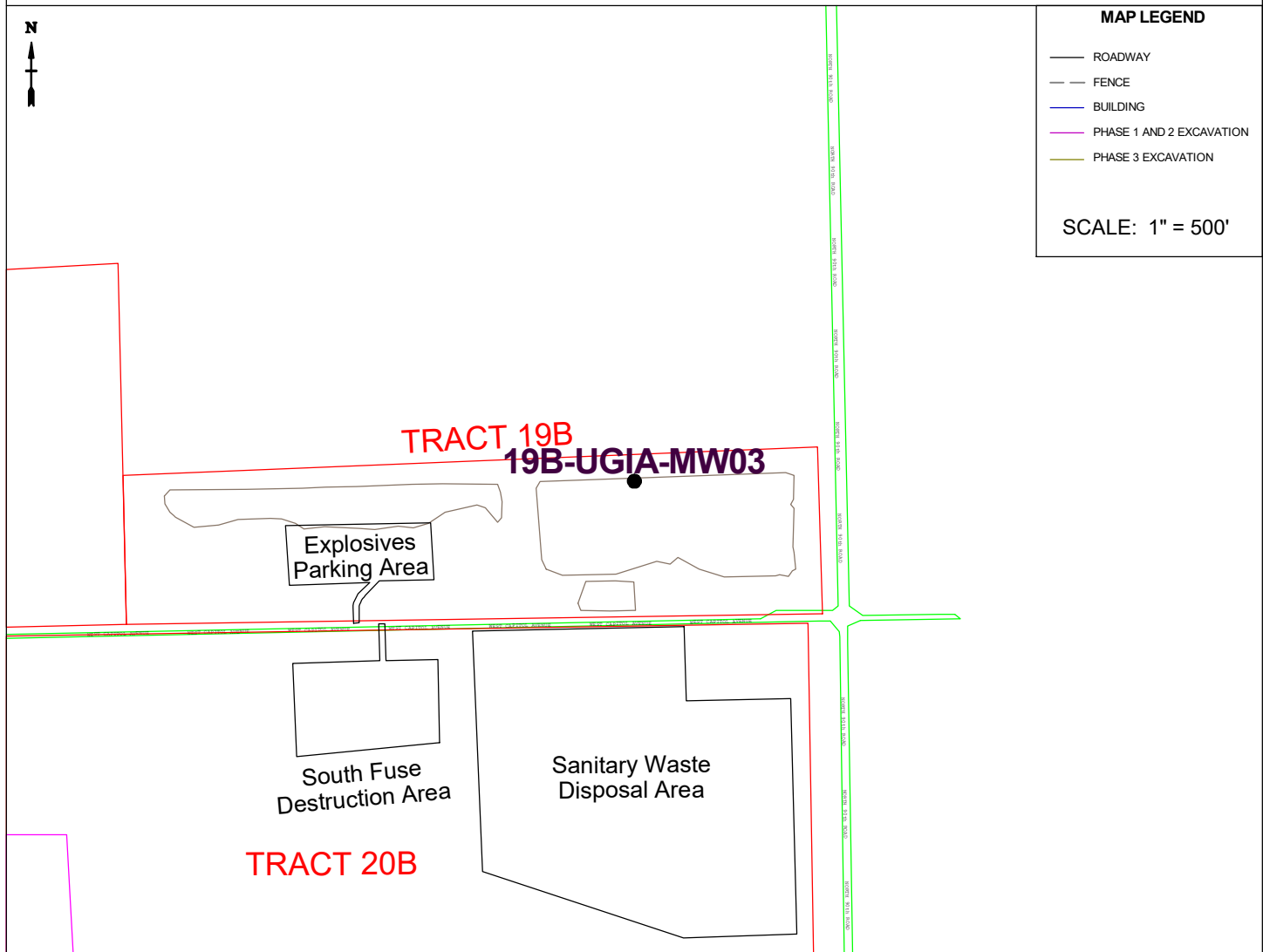
HOLE NO

19B-LGIA-MW02

| | | | | | |
|--|-------------------|---|---------------------------------------|------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19B-UGIA-MW03 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Mobile HDX 61 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
409268.4 North 2050663.4 East | | | |
| | | 9. SURFACE ELEVATION
1903.3' MSL | | | |
| | | 10. DATE STARTED
9/26/2018 | 11. DATE COMPLETED
9/26/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
12.83 ft on 9/27/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
19.2 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
13.45 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



| | | | |
|---------|------------------------------|---------|---------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 19B-UGIA-MW03 |
|---------|------------------------------|---------|---------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-UGIA-MW03

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1903.3 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1902.3 | 1 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | | | | | |
| 1901.3 | 2 | | | | | | |
| 1900.3 | 3 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3-5 ft.
10% Rec. | | 6 | |
| 1899.3 | 4 | | | | | 4 | |
| | | | | | | 4 | |
| 1898.3 | 5 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
5-7 ft.
80% Rec. | | 4 | |
| | | | | | | 4 | |
| 1897.3 | 6 | | | | | 4 | |
| | | | | | | 3 | |
| 1896.3 | 7 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
7-9 ft.
100% Rec. | | 4 | |
| | | | | | | 3 | |
| 1895.3 | 8 | | | | | 3 | |
| | | | | | | 5 | |
| 1894.3 | 9 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-UGIA-MW03

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-UGIA-MW03

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1894.3 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) (continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
9-11 ft.
100% Rec. | | 9 | |
| 1893.3 | 10 | | | | | 8 | |
| | | | | | | 10 | |
| | | | | | | 9 | |
| 1892.3 | 11 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | | |
| 1891.3 | 12 | | | | | | |
| 1890.3 | 13 | | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
13-15 ft.
100% Rec. | | 8 | |
| 1889.3 | 14 | | | | | 9 | |
| | | | | | | 7 | |
| | | | | | | 9 | |
| 1888.3 | 15 | | | | | | |
| 1887.3 | 16 | | | | | | |
| 1886.3 | 17 | | | | | | |
| 1885.3 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-UGIA-MW03

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-UGIA-MW03

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 4 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1885.3 | 18 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
18-19 ft.
100% Rec. | | 9 | |
| | | | | | | 10 | |
| 1884.3 | 19 | | | | | 10 | |
| | | Bottom of Borehole @ 19.2 ft
10 Gallons of Water Lost During Drilling
Heaving Sands 10.8-19.2 ft
Monitoring Well Materials:
250 Lbs #1 Silica Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | 9 | |
| 1883.3 | 20 | | | | | | |
| 1882.3 | 21 | | | | | | |
| 1881.3 | 22 | | | | | | |
| 1880.3 | 23 | | | | | | |
| 1879.3 | 24 | | | | | | |
| 1878.3 | 25 | | | | | | |
| 1877.3 | 26 | | | | | | |
| 1876.3 | 27 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

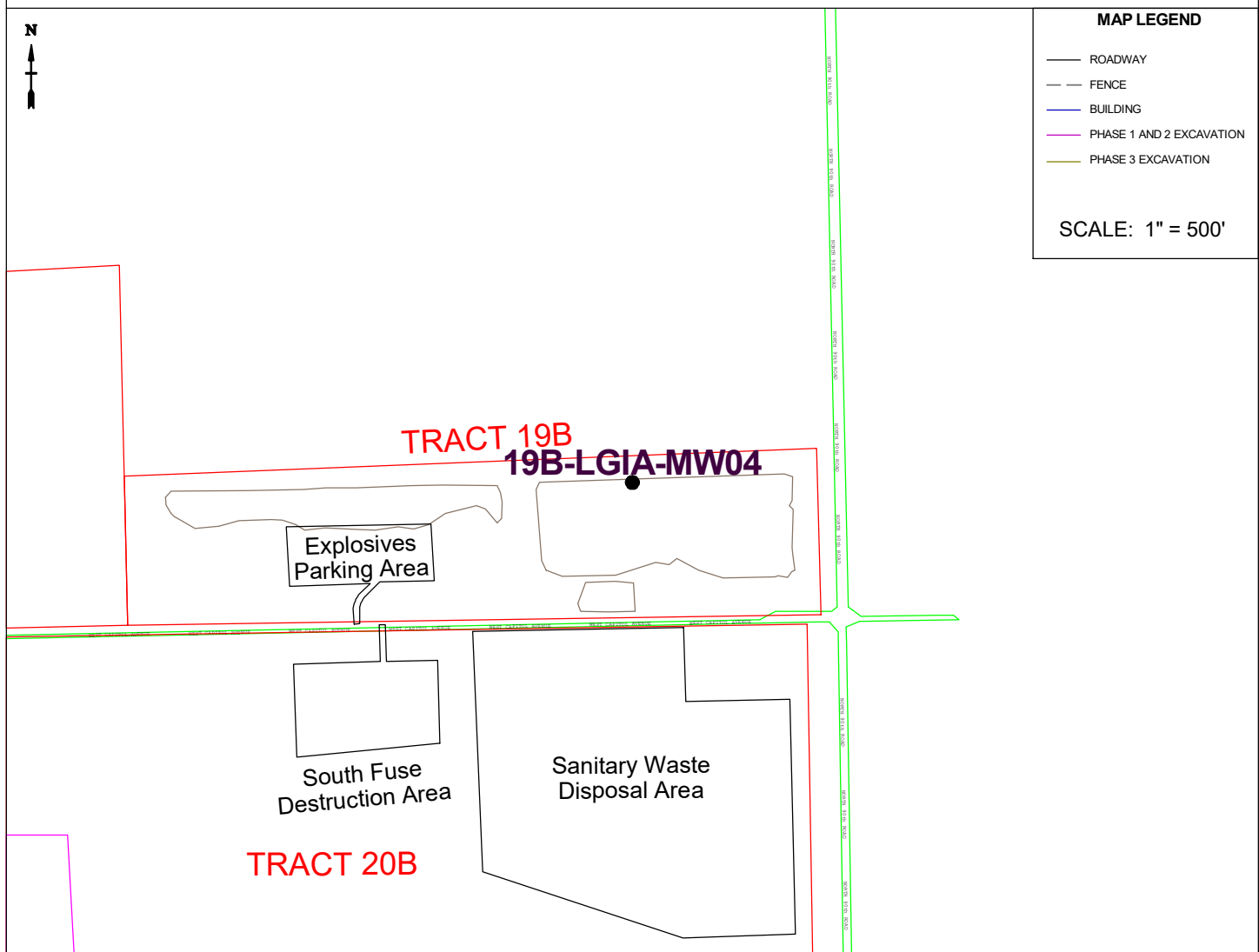
HOLE NO

19B-UGIA-MW03

| | | | | | |
|--|-------------------|---|---------------------------------------|------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19B-LGIA-MW04 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 6 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Mobile HDX 61 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
409268.0 North 2050658.9 East | | | |
| | | 9. SURFACE ELEVATION
1903.3' MSL | | | |
| | | 10. DATE STARTED
9/26/2018 | 11. DATE COMPLETED
9/26/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
12.71 ft on 9/27/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
39.2 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
13.23 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



| | | | |
|---------|------------------------------|---------|---------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 19B-LGIA-MW04 |
|---------|------------------------------|---------|---------------|

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-LGIA-MW04

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1903.3 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1902.3 | 1 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | | | | | |
| 1901.3 | 2 | | | | | | |
| 1900.3 | 3 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3-5 ft.
10% Rec. | | 6 | |
| 1899.3 | 4 | | | | | 4 | |
| | | | | | | 4 | |
| 1898.3 | 5 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
5-7 ft.
80% Rec. | | 4 | |
| | | | | | | 4 | |
| 1897.3 | 6 | | | | | 4 | |
| | | | | | | 3 | |
| 1896.3 | 7 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
7-9 ft.
100% Rec. | | 4 | |
| | | | | | | 3 | |
| 1895.3 | 8 | | | | | 3 | |
| | | | | | | 5 | |
| 1894.3 | 9 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-LGIA-MW04

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-LGIA-MW04

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1894.3 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) (continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
9-11 ft.
100% Rec. | | 9 | |
| | | | | | | 8 | |
| 1893.3 | 10 | | | | | 10 | |
| | | | | | | 9 | |
| 1892.3 | 11 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | | |
| 1891.3 | 12 | | | | | | |
| 1890.3 | 13 | | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
13-15 ft.
100% Rec. | | 8 | |
| 1889.3 | 14 | | | | | 9 | |
| | | | | | | 7 | |
| 1888.3 | 15 | | | | | 9 | |
| 1887.3 | 16 | | | | | | |
| 1886.3 | 17 | | | | | | |
| 1885.3 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

19B-LGIA-MW04

HTRW DRILLING LOG

S. Cameron

19B-LGIA-MW04

| | |
|----------|---|
| DISTRICT | US Army Corps of Engineers - Omaha District |
|----------|---|

SHEET 4 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1885.3 | 18 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
18-20 ft.
100% Rec. | | 9 | |
| | 10 | | | | | | |
| 1884.3 | 19 | | | | | 10 | |
| | | | | | | 9 | |
| 1883.3 | 20 | | | | | | |
| | | | | | | | |
| 1882.3 | 21 | | | | | | |
| | | | | | | | |
| 1881.3 | 22 | | | | | | |
| | | | | | | | |
| 1880.3 | 23 | | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 7
23-25 ft.
100% Rec. | | 8 | |
| | | | | | | 9 | |
| 1879.3 | 24 | | | | | 11 | |
| | | | | | | 12 | |
| 1878.3 | 25 | | | | | | |
| | | | | | | | |
| 1877.3 | 26 | | | | | | |
| | | | | | | | |
| 1876.3 | 27 | | | | | | |

| | |
|---------|---------------|
| HOLE NO | 19B-LGIA-MW04 |
|---------|---------------|

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-LGIA-MW04

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 5 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|---|---------------------------------|-------------------|----------------|
| 1876.3 | 27 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | |
| 1875.3 | 28 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 8
28-30 ft.
100% Rec. | | 11 | |
| | | | | | | 12 | |
| 1874.3 | 29 | | | | | 14 | |
| | | | | | | 15 | |
| 1873.3 | 30 | | | | | | |
| 1872.3 | 31 | | | | | | |
| 1871.3 | 32 | | | | | | |
| 1870.3 | 33 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 9
33-35 ft.
100% Rec.
SS 10
33-35 ft.
100% Rec. | | 9
12 | |
| | | | | | | 10
14 | |
| 1869.3 | 34 | | | | | 9
16 | |
| | | | | | | 11
16 | |
| 1868.3 | 35 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 11
35-37 ft.
100% Rec. | | 12 | |
| | | | | | | 13 | |
| 1867.3 | 36 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

19B-LGIA-MW04

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-LGIA-MW04

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District


SHEET 6 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1867.3 | 36 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | 14 | |
| | | | | | | 17 | |
| 1866.3 | 37 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 12
37-39 ft.
100% Rec. | | 8 | |
| | | | | | | 8 | |
| 1865.3 | 38 | | | | | 7 | |
| | | | | | | 7 | |
| 1864.3 | 39 | (CL) LEAN CLAY (90%): Low to medium
plasticity, medium toughness, medium dry
strength, no dilatancy, slightly moist, fine sand
(10%). (5GY 5/1) | | | | | |
| 1863.3 | 40 | Bottom of Borehole @ 39.2 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 10.8-39.2 ft
Monitoring Well Materials:
250 Lbs #1 Silica Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | |
| 1862.3 | 41 | | | | | | |
| 1861.3 | 42 | | | | | | |
| 1860.3 | 43 | | | | | | |
| 1859.3 | 44 | | | | | | |
| 1858.3 | 45 | | | | | | |

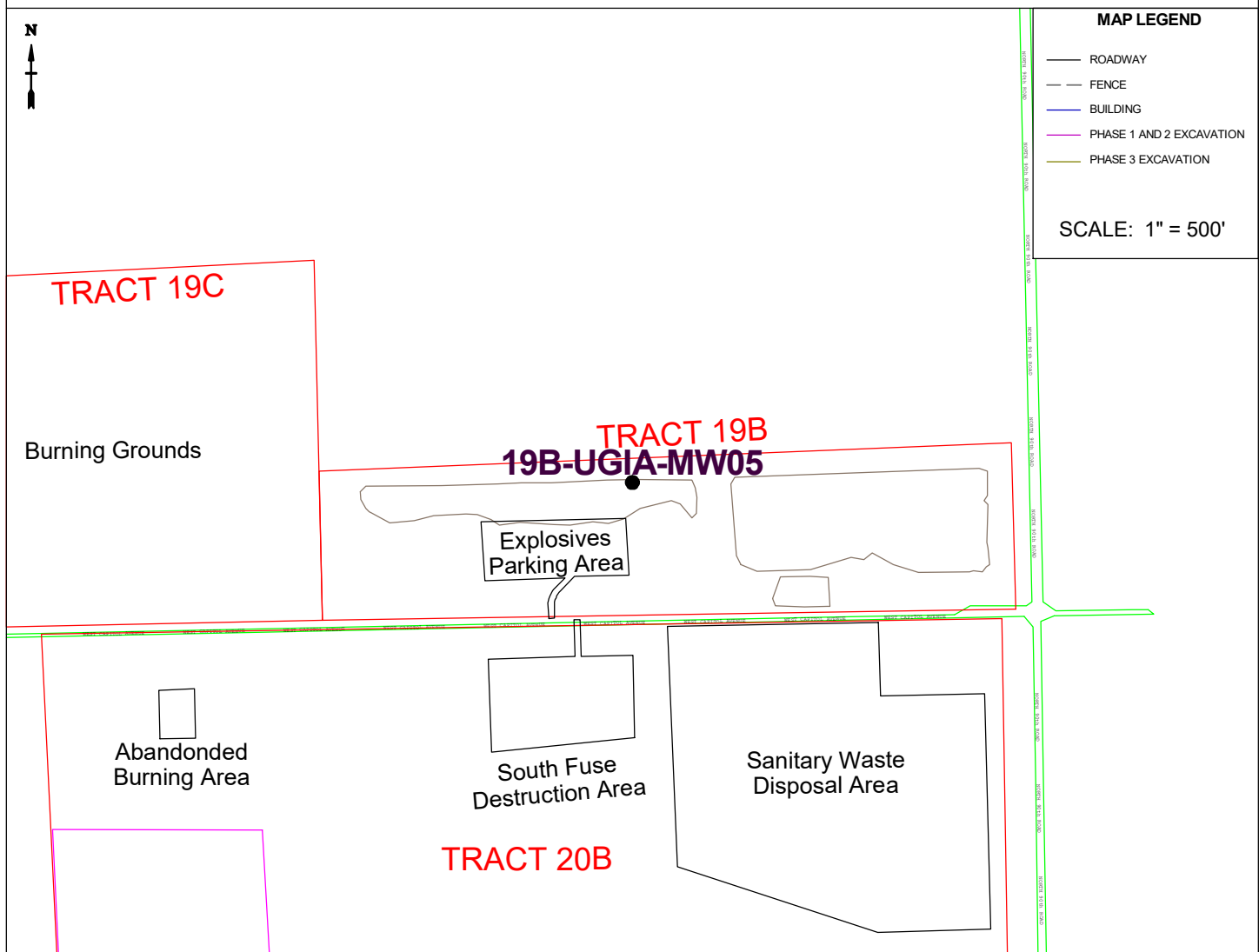
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-LGIA-MW04

| | | | | | |
|--|-------------------|---|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19B-UGIA-MW05 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Mobile HDX 61 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
409252.1 North 2050075.3 East | | | |
| | | 9. SURFACE ELEVATION
1903.4' MSL | | | |
| | | 10. DATE STARTED
9/27/2018 | | 11. DATE COMPLETED
9/27/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
12.73 ft on 9/28/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
19.2 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
13.17 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



| | | | |
|---------|------------------------------|---------|---------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 19B-UGIA-MW05 |
|---------|------------------------------|---------|---------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-UGIA-MW05

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1903.4 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1902.4 | 1 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | | | | | |
| 1901.4 | 2 | | | | | | |
| 1900.4 | 3 | | | | | | |
| 1899.4 | 4 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3-5 ft.
5% Rec. | | 6 | |
| | | | | | | 5 | |
| | | | | | | 4 | |
| | | | | | | 6 | |
| 1898.4 | 5 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
5-7 ft.
80% Rec. | | 6 | |
| | | | | | | 6 | |
| 1897.4 | 6 | | | | | 5 | |
| | | | | | | 6 | |
| 1896.4 | 7 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
7-9 ft.
100% Rec. | | 6 | |
| | | | | | | 5 | |
| 1895.4 | 8 | | | | | 5 | |
| | | | | | | 5 | |
| 1894.4 | 9 | | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

19B-UGIA-MW05

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-UGIA-MW05

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1894.4 | 9 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, brown and black mottles. (5Y 3/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
9-11 ft.
100% Rec. | | 5 | |
| 1893.4 | 10 | | | | | 4 | |
| 1892.4 | 11 | | | | | 4 | |
| 1891.4 | 12 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | 6 | |
| 1890.4 | 13 | | | | | 8 | |
| 1889.4 | 14 | | | | | 9 | |
| 1888.4 | 15 | | | | | 8 | |
| 1887.4 | 16 | | | | | 10 | |
| 1886.4 | 17 | | | | | | |
| 1885.4 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-UGIA-MW05

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-UGIA-MW05

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 4 OF 4 SHEETS


| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1885.4 | 18 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
18-19 ft.
100% Rec. | | 9 | |
| | | | | | | 10 | |
| 1884.4 | 19 | | | | | 10 | |
| 1883.4 | 20 | Bottom of Borehole @ 19.2 ft
10 Gallons of Water Lost During Drilling
Heaving Sands 10.9-19.2 ft
Monitoring Well Materials:
250 Lbs #1 Silica Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | 10 | |
| 1882.4 | 21 | | | | | | |
| 1881.4 | 22 | | | | | | |
| 1880.4 | 23 | | | | | | |
| 1879.4 | 24 | | | | | | |
| 1878.4 | 25 | | | | | | |
| 1877.4 | 26 | | | | | | |
| 1876.4 | 27 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

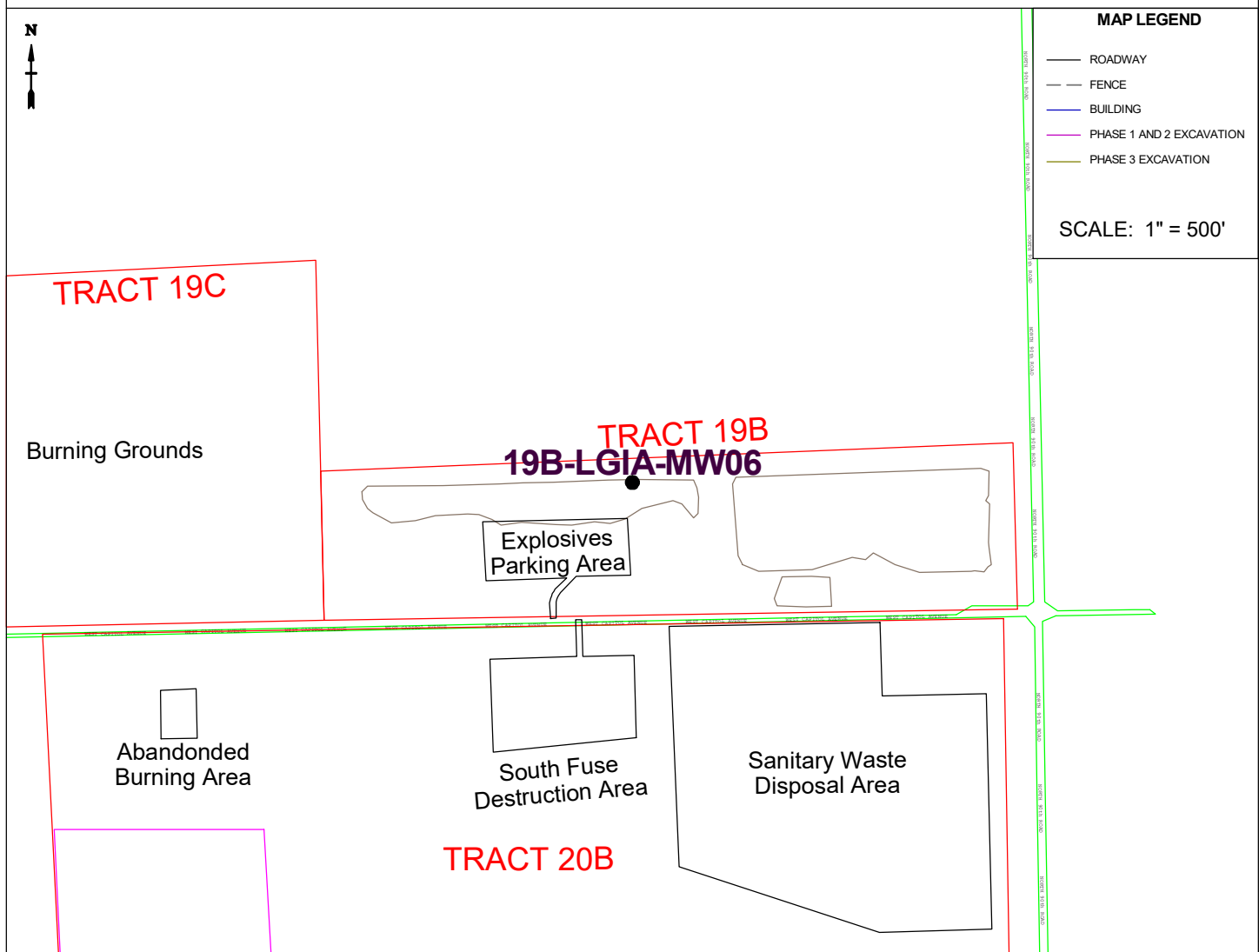
HOLE NO

19B-UGIA-MW05

| | | | | | |
|--|-------------------|---|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19B-LGIA-MW06 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 6 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Mobile HDX 61 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
409252.1 North 2050070.5 East | | | |
| | | 9. SURFACE ELEVATION
1903.4' MSL | | | |
| | | 10. DATE STARTED
9/26/2018 | | 11. DATE COMPLETED
9/26/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
12.77 ft on 9/27/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
39.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
12.94 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



| | | | |
|---------|------------------------------|---------|---------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 19B-LGIA-MW06 |
|---------|------------------------------|---------|---------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER
19B-LGIA-MW06

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT US Army Corps of Engineers - Omaha District

SHEET 2 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1903.4 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1902.4 | 1 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | | | | | |
| 1901.4 | 2 | | | | | | |
| 1900.4 | 3 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3-5 ft.
5% Rec. | | 6 | |
| 1899.4 | 4 | | | | | 5 | |
| | | | | | | 4 | |
| | | | | | | 6 | |
| 1898.4 | 5 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
5-7 ft.
80% Rec. | | 6 | |
| | | | | | | 6 | |
| 1897.4 | 6 | | | | | 5 | |
| | | | | | | 6 | |
| 1896.4 | 7 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
7-9 ft.
100% Rec. | | 6 | |
| | | | | | | 5 | |
| 1895.4 | 8 | | | | | 5 | |
| | | | | | | 5 | |
| 1894.4 | 9 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-LGIA-MW06

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-LGIA-MW06

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1894.4 | 9 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, brown and black mottles. (5Y 3/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
9-11 ft.
100% Rec. | | 5 | |
| 1893.4 | 10 | | | | | 4 | |
| 1892.4 | 11 | | | | | 4 | |
| 1891.4 | 12 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | 6 | |
| 1890.4 | 13 | | | | | 8 | |
| 1889.4 | 14 | | | | | 9 | |
| 1888.4 | 15 | | | | | 8 | |
| 1887.4 | 16 | | | | | 10 | |
| 1886.4 | 17 | | | | | | |
| 1885.4 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-LGIA-MW06

HTRW DRILLING LOG

S. Cameron

19B-LGIA-MW06

| | |
|----------|---|
| DISTRICT | US Army Corps of Engineers - Omaha District |
|----------|---|

| |
|---------------------|
| SHEET 4 OF 6 SHEETS |
|---------------------|

| | | | |
|---------|------------------------------|---------|---------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 19B-LGIA-MW06 |
|---------|------------------------------|---------|---------------|

(Proponent: CECW-EG)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-LGIA-MW06

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 5 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|---|---------------------------------|-------------------|----------------|
| 1876.4 | 27 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | |
| 1875.4 | 28 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 8
28-30 ft.
100% Rec. | | 10 | |
| 1874.4 | 29 | | | | | 8 | |
| 1873.4 | 30 | | | | | 9 | |
| 1872.4 | 31 | | | | | 10 | |
| 1871.4 | 32 | | | | | | |
| 1870.4 | 33 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 9
33-35 ft.
100% Rec.
SS 10
33-35 ft.
100% Rec. | | 10
8 | |
| 1869.4 | 34 | | | | | 12
9 | |
| 1868.4 | 35 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 11
35-37 ft.
100% Rec. | | 12
9 | |
| 1867.4 | 36 | | | | | 10
7 | |
| | | | | | | 4 | |
| | | | | | | 2 | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-LGIA-MW06

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19B-LGIA-MW06

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 6 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1867.4 | 36 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | 6 | |
| | | | | | | 13 | |
| 1866.4 | 37 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 12
37-39 ft.
100% Rec. | | 8 | |
| | | | | | | 7 | |
| 1865.4 | 38 | (CL) LEAN CLAY (90%): Low to medium
plasticity, medium toughness, medium dry
strength, no dilatancy, slightly moist, fine sand
(10%). (5GY 5/1) | | | | 9 | |
| | | | | | | 7 | |
| 1864.4 | 39 | Bottom of Borehole @ 39 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 10.9-39 ft
Monitoring Well Materials:
250 Lbs #1 Silica Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | |
| 1863.4 | 40 | | | | | | |
| 1862.4 | 41 | | | | | | |
| 1861.4 | 42 | | | | | | |
| 1860.4 | 43 | | | | | | |
| 1859.4 | 44 | | | | | | |
| 1858.4 | 45 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19B-LGIA-MW06

Tract 19C Boring Logs
Soil Borings


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| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB06B</i> | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET <i>1</i> OF <i>3</i> | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Truck 19L, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GG2015 Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>GG2015 Geoprobe</i>
<i>4' x 2" Dual Tube Sampler</i> | | | | 8. HOLE LOCATION
<i>19C-SB06B</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>6.12.18</i> | | 11. DATE COMPLETED
<i>6.12.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>-9.5</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>12</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>3</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| <i>ROX Manganese</i> | | | | | | | |
| 22. DISPOSITION OF HOLE
<i>Sample / Abandon</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepeth</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="text-align: right;">SCALE: <i>Not to Scale</i></div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>19C-SB06B</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB06B |
|--|--------------|--|---------------------------|--|---------------------------------|-------------------|--------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hedgecock | | | SHEET
2 | SHEETS
OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1250
612.8 | | Lean clay w/ F. F. Sand,
moist, Black/Fe stain,
Dk Gray (Sy 4/1), L. plastic
m. stiff | PID | | | NA | |
| | 1 | | | | | | |
| | 2 | Increasing Fe stain | 0.0 | 1 | CL | | |
| | 3 | | | | | | |
| | 4 | Same as above | 0.0 | | | | |
| | 5 | | | | | | |
| | 6 | | 0.0 | | | | |
| | 7 | Increasing Fe stain | | | | | |

PROJECT
CHAAP RIES

HOLE NO
19C-SB06B

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB06B |
|--|--------------|--|---------------------------|--|---------------------------------|-------------------|-------------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hodgepohl | | | SHEET
3 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | | NA | |
| | 8 | — — — — — | 0.0 | — | | — | |
| | 9 | Changes to Black Sy
(Z.S/I), stiff, L. plastic
moist | | | | | Sample
19C-SB06B
@ 1300 |
| | | Becomes wet | | | | WL
@ 9.5 | |
| | 10 | Sharp to F. Sand in fact
Fines, wet, non cohesive,
F. Small Sand, Sub angular
Sub rounded | 0.0 | | | | |
| | 11 | | | | | | |
| 1306
6/2/18 | 12 | End of boring @ 12' | | | | | |
| | 13 |  | | | | | |

| | |
|-----------------------|----------------------|
| PROJECT
CHAAP RIES | HOLE NO
19C-SB06B |
|-----------------------|----------------------|

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB09B</i> | |
|--|--|--------------------------------|--|---|--|--|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET <i>1</i> OF <i>3</i> SHEETS | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Tract 19L, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GGZODT Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT | | <i>GGZODT Geoprobe</i> | | 8. HOLE LOCATION
<i>19C-SB09B</i> | | | |
| | | <i>4"x2" Dual Tube Sampler</i> | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>11.5</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>12.1</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>3</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| <i>Manganese</i> | | | | | | 21. TOTAL CORE
% | |
| 22. DISPOSITION OF HOLE | | BACKFILLED | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR | |
| <i>Sample / Abandon</i> | | <i>X</i> | | | | <i>A. Hedgepeth</i> | |
| <div style="display: flex; justify-content: space-between;"> LOCATION SKETCH/COMMENTS SCALE: <i>Not to Scale</i> </div> <div style="text-align: center; margin-top: 20px;"> </div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>19C-SB09B</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB09B |
|--|--------------|---|-------------------------------------|---|---------------------------------|-------------------|--------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hedgpeth | | | SHEET
2 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d)
Headspace | GEO TECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1135
6.12.18 | | Topsoil, Lean clay w Tr.
F. Sand, light Gray (Sy 7/1)
Dry, Dense, noncohesive | | | | NA | |
| | 1 | Becomes moist, L. plastic,
m. soft, Fe stain | | | | | |
| | 2 | | 0.0 | 1 | CL | | |
| | 3 | | | | | | |
| | 4 | | 0.0 | | | | |
| | 5 | Becomes m. plastic,
Increasing Fe stain,
V. DK Gray (Sy 3/1) | | | | | |
| | 6 | | 0.0 | 2 | CL | | |
| | 7 | | | | | | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB09B |
|--|--------------|--|-----------------------------------|---|---------------------------------|-------------------|---------------------------------|
| PROJECT
CHAAP RIFS | | | INSPECTOR
A. Hedgepeth | | | SHEET 3 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d)
Handpne | GEO TECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | | NA | |
| | 8 | Becomes v. soft, m. plastic
Block (2.5/11 5y) | 0.0 | | | | |
| | 9 | | | | | | |
| | 10 | Becomes stiff | 0.1 | 3 | CL | | Collect
19C-SB09B
@ 11.45 |
| | 11 | | | | | | |
| | 12 | Sharp change to F. Sand,
w. fine s, wet, nonclastic
Block (2.5/11), subangular/sub rounded | 0.0 | | | | WL-11.5' |
| 1145
6/2/18 | 12 | End of Boring @ 12' | | | | | |
| | 13 | | | | | | |

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB03C</i> | |
|--|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET <i>1</i> OF <i>3</i> | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Tract 19L, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GGZ015 Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>GGZ015 Geoprobe
4"x2" Dual Tube Sampler</i> | | | | 8. HOLE LOCATION
<i>19C-SB03C</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>6.13.18</i> | | 11. DATE COMPLETED
<i>6.13.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>12.1</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>14</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>4</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| <i>Cobalt/Manganese</i> | | | | | | 21. TOTAL CORE
% | |
| 22. DISPOSITION OF HOLE
<i>Sample / Abandon</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>D. Hodge</i> | |
| <div style="display: flex; justify-content: space-between;"> LOCATION SKETCH/COMMENTS SCALE: <i>Not to Scale</i> </div> <div style="text-align: center; margin-top: 20px;"> </div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>19C-SB03C</i> | |

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

19C-SB03C

PROJECT

CHAAP RIES

INSPECTOR

D. Reddy

SHEET

SHEETS

2 OF 3

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|-----------------|--------------|--|------------------------|--|---------------------------------|-------------------|----------------|
| 1030
6.13.18 | 1 | Lean Clay w/ T. F. Sand,
Dry to moist, Fe stain,
stiff, m. plastic,
Gray (Sy 511) | | | | NA | |
| | 2 | Becomes moist &
has Fe / Black stain | 0.0 | 44
CL
1 | CL | | |
| | 3 | | | | | | |
| | 4 | T. F. Gravel | 0.0 | | | | |
| | 5 | | | | | | |
| | 6 | Increasing Fe stain,
m. stiff to soft, m. plastic | 0.0 | 2 | CL | | |
| | 7 | | | | | | |

PROJECT

CHAAP RIES

HOLE NO

19C-SB03C

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

19C-SB03C

PROJECT

CHAAP RIES

INSPECTOR

A. Hedges

SHEET

SHEETS

3 OF 3

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|-----------------|--------------|--|------------------------|--|---------------------------------|-------------------|--------------------------------|
| | | Same as previous page | | | | NA | |
| | 8 | — — — — —
Becomes stiff, m. plastic
Block (5, 2.5/1), moist | 0.0 | — — — — — | — — — — — | — — — — — | — — — — — |
| | 9 | | | | | | |
| | 10 | | 0.0 | 3 | CL | | |
| | 11 | | | | | | Sample
19C-SB03C
@ 10.40 |
| | 12 | Silty Sand, Black, wet,
non cohesive
Silty to F. Sand | 0.0 | — — — — — | ML | 12.1 | — — — — — |
| | 13 | | | 4 | | | |
| | 14 | F. Sand to M. Sand w/
F. Fines, wet, non cohesive
Subangular/sub rounded | | | SP | | |
| 1040
6.13.18 | 14 | End of bore hole @ 14' | | | | | |

PROJECT

CHAAP RIES

HOLE NO

19C-SB03C

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB05C</i> | |
|---|--|------------------------|--|---|--|--|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET 1 OF 3 SHEETS | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Tract 19L, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GGZ015 Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>GGZ015 Geoprobe
4' x 2" Dual Tube Sampler</i> | | | | 8. HOLE LOCATION
<i>19C-SB05C</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>6.12.18</i> | | 11. DATE COMPLETED
<i>6.12.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>8.0</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>12'</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>3</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>RDX</i> | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| | | | | | | 21. TOTAL CORE
% | |
| 22. DISPOSITION OF HOLE
<i>Sample / Abandon</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>D. Redgepdl</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| SCALE: <i>Not to Scale</i> | | | | | | | |
| | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>19C-SB05C</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB05C |
|--|--------------|---|--------------------------|--|---------------------------------|-------------------|--------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hedgpeth | | | | SHEET
2 OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1323
6.12.8 | 1 | Lean Clay w. F. Sand
Dry to moist, light G-ay
(5y 7/1), Cohesive,
non plastic, | | | | NA | |
| | 2 | moist, m. plastic,
Fe stain, soft | 0.0 | 1 | CL | | |
| | 3 | | | | | | |
| | 4 | Same as above | 0.0 | | | | |
| | 5 | | | | | | |
| | 6 | Turns v. Dk Brown
5y 3/1 | 0.0 | 2 | CL | | |
| | 7 | | | | | | |

PROJECT

CHAAP RIES

HOLE NO

19C-SB05C

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB05C |
|--|--------------|--|----------------------------|--|---------------------------------|-------------------|------------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
D. Hedgerdahl | | | SHEET
3 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | Turns Black Sy 2.5/1
L. plastic, stiff | | | | NA | Sample
19C-SB05C
@1335 |
| | 8 | F. Sand in F. Fines,
Black Sy 2.5/1, noncohesive
Lat. Sub angular, Sub rounded
M. dense | 0.0 | — | | — | WL @ 8.0 |
| | 9 | | | | | | |
| | 10 | | 0.0 | 3 | CL | | |
| | 11 | Increasing grain size to
F. to Med. | | | | | |
| 1335
6/12/8 | 12 | End of Boring | | | | | |
| | 13 | | | | | | |

PROJECT
CHAAP RIES

HOLE NO
19C-SB05C

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB06C</i> | |
|--|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET <i>1</i> OF <i>3</i> | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Tract 19L, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GGZ015 Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>GGZ015 Geoprobe</i>
<i>4"x2" Dual Tube Sampler</i> | | | | 8. HOLE LOCATION
<i>19C-SB06C</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>6.12.18</i> | | 11. DATE COMPLETED
<i>6.12.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>11.2</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>12'</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>3</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>ROX manganese</i> | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| 22. DISPOSITION OF HOLE
<i>Sample / Abandon</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. L. Hedger</i> | |
| <div style="display: flex; justify-content: space-between;"> <div>LOCATION SKETCH/COMMENTS</div> <div>SCALE: <i>Not to Scale</i></div> </div> <div style="text-align: center; margin-top: 20px;"> </div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>19C-SB06C</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB06C |
|--|--------------|--|------------------------|--|---------------------------------|-------------------|--------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hedger | | | SHEET
2 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1340
6-12-18 | 1 | Lean clay w. F. Sand
light Gray (5y 7/1),
non plastic, cohesive,
m. dense | | | | NA | |
| | 2 | Becomes moist, Fe stain
L plastic, m. stiff | 0.0 | 1 | CL | | |
| | 3 | | | | | | |
| | 4 | — — — | 0.0 | — | — | — | |
| | 5 | Becomes Gray (5y 5/1)
increasing Fe stain | | | | | |
| | 6 | | 0.0 | 2 | CL | | |
| | 7 | | | | | | |

PROJECT
CHAAP RIES

HOLE NO
19C-SB06C

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB06C |
|--|--------------|---|---------------------------|---|---------------------------------|-------------------|-------------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
R. Wedgeport | | | SHEET
3 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEO TECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | | NA | |
| | 8 | | 0.0 | | | | |
| | 9 | Becomes Block (5y 2.5/1)
stiff, L. plastic | | | | | |
| | 10 | | 0.0 | 3 | CL | | Sample
19C-SB06C
@ 1345 |
| | 11 | | | | | | Σ
WL-11.2' |
| | 12 | F. Sand, v. Dk. Gray (5y
3/1), wet, non cohesive
F to M. sand, Tr. Fines,
Sub angular, sub rounded | 0.0 | | | | |
| | | End of boring at 12' | | | | | |
| | 13 | | | | | | |

PROJECT
CHAAP RIES

HOLE NO
19C-SB06C

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB07C</i> | |
|--|--|--|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET 1 OF 3 SHEETS | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Tract 19L, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GGZODS Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT | | <i>GGZODS Geoprobe</i>
<i>4"x2" Dual Tube Sampler</i> | | 8. HOLE LOCATION
<i>19C-SB07C</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>6.12.18</i> | | 11. DATE COMPLETED
<i>6.12.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>12.5'</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>14'</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<input checked="" type="checkbox"/> | | 19. TOTAL NUMBER OF CORE BOXES
<i>3</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| <i>Iron</i> | | | | | | | |
| 22. DISPOSITION OF HOLE
<i>Sample / Abandon</i> | | BACKFILLED
<input checked="" type="checkbox"/> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepeth</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="position: relative; width: 100%; height: 100%;"> <div style="position: absolute; top: 10%; left: 30%;"> <i>07C SHKE</i>
 </div> <div style="position: absolute; top: 60%; left: 40%;"> <i>49'</i> </div> <div style="position: absolute; top: 70%; left: 40%;"> <i>52'</i> </div> <div style="position: absolute; top: 75%; left: 50%;"> <i>19C-SB07C</i> </div> <div style="position: absolute; top: 10%; right: 10%;"> </div> </div> | | | | | | | |
| PROJECT: <i>CHAAP RIFS</i> | | | | | | HOLE NO: <i>19C-SB07C</i> | |

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

19C-5B07C

PROJECT

CHAAP RIES

INSPECTOR

A. Hedgepeth

SHEET

SHEETS

2 OF 3

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|-----------------|--------------|--|------------------------|--|---------------------------------|-------------------|----------------|
| 1355
6.12.18 | 1 | Lean Clay w/ s. f. Sand,
Dry, non plastic, cohesive
m. dense, light Gray
(SY 711) | | | | NA | |
| | 2 | Becomes moist, m. plastic,
Fe stain, soft | 0.0 | 1 | CL | | |
| | 3 | | | | | | |
| | 4 | Same as above | 0.0 | | | | |
| | 5 | | | | | | |
| | 6 | | 0.0 | | | | |
| | 7 | | | | | | |

PROJECT

CHAAP RIES

HOLE NO

19C-5B07C

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB07C |
|--|--------------|---|--------------------------|--|---------------------------------|-------------------|-------------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hedgcock | | | | SHEET
3 OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous pg | | | | NA | |
| | 8 | Same as above | 0.0 | | | | |
| | 9 | Becomes Black, stiff,
L. plastic, | | | | | |
| | 10 | | 0.0 | 3 | CL | | |
| | 11 | | | | | | |
| | 12 | | 0.0 | | | | Sample
19C-SB0CC
@ 1405 |
| | 13 | F. Sand w. Tr. Fines,
V. dk Gray Sy (3/1), wet
non cohesive, m. dense | | 4 | CL | | WL @ 12.5 |
| 1405
6.12.18 | 14 | F. to M sand sub angular
sub rounded | | | | | |
| | | End of boring at 14' | | | | | |

PROJECT
CHAAP RIES

HOLE NO
19C-SB07C

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB02D</i> | |
|---|--|------------------------|--|---|--|--|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET
<i>1</i> OF <i>3</i> SHEETS | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Tree 19L, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GG2015 Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>GG2015 Geoprobe
4"x2" Dual Tube Sampler</i> | | | | 8. HOLE LOCATION
<i>19C-SB02D</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>6.13.18</i> | | 11. DATE COMPLETED
<i>6.13.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>19.5</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>19.5</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| <i>Arsenic, Cobalt, Iron, Manganese</i> | | | | | | 21. TOTAL CORE
% | |
| 22. DISPOSITION OF HOLE
<i>Sample / Abandon</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedges</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="text-align: right;">SCALE: <i>Not to Scale</i></div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>19C-SB02D</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB-20 |
|--|--------------|--|--------------------------|--|---------------------------------|-------------------|--------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
J. Redgepda | | | SHEET
2 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | 1 | Topsoil, moist, silty clay
w/ T.F. Sand, Dark Brown
($U_c = 3/3$) cohesive, non
plastic | | | | NA | |
| | 2 | Lean clay w/ T.F. Sand,
moist, T.F. gravel,
v. stiff, non plastic
Gray (U_c 5/1) | 0.0 | 1 | CL | | |
| | 3 | | | | | | |
| | 4 | Same as above | 0.0 | | | | |
| | 5 | | | | | | |
| | 6 | m. plastic, stiff | 0.0 | 2 | CL | | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB02D |
|--|--------------|--|-------------------------|--|---------------------------------|-------------------|-------------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hodgson | | | | SHEET
3 OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | | NA | |
| | 8 | Same as above
w/ Fe Stein | 0.0 | | | | |
| | 9 | | | | | | |
| | 10 | | 0.0 | 3 | CL | | |
| | 11 | | | | | | |
| | 12 | Same as above, no Fe,
Black (Sy 2.5%), Soft
L. plastic | 0.0 | | | | |
| | 13 | | | 4 | CL | | Sample
19C-SB02D
@ 1015 |
| | 14 | | 0.0 | | | | |
| 1015 | | Wet, F. Sand, noncohesive | | | | | ▽ 14.5' |
| PROJECT | CHAAP RIES | | | | HOLE NO
19C-SB02D | | |
| | | | | End of boring at 14.5' | | | |

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB04D</i> | |
|---|--|--|--|---|--|--|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | | SHEET 1 OF 3 SHEETS | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Truck 19L, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GGZODT Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT | | <i>GGZODT Geoprobe</i>
<i>4"x2" Dual Tube Sampler</i> | | 8. HOLE LOCATION
<i>19C-SB04D</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>6.13.18</i> | | 11. DATE COMPLETED
<i>6.13.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>10.2</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>12</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>3</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| <i>Iron / Manganese</i> | | | | | | 21. TOTAL CORE
% | |
| 22. DISPOSITION OF HOLE
<i>Sample / Abandon</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>D. Hedgcock</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="text-align: right; margin-bottom: 10px;">SCALE: <i>Not to Scale</i></div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>19C-SB04D</i> | |

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

19C-SB04D

PROJECT

CHAAP RIES

INSPECTOR

D. Hedger

SHEET

SHEETS

2 OF 3

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEO TECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|----------------|--------------|--|------------------------|---|---------------------------------|-------------------|----------------|
| 850
6.13.18 | | Silty Clay w. F. F. Sand,
Dry non cohesive, m. dense
Gray (Sy 5/1) | | | | NA | |
| | 1 | Becomes moist, stiff,
Fe stain, m. plastic | | | | | |
| | 2 | | 0.6 | 1 | CL | | |
| | 3 | | | | | | |
| | 4 | Same as above | 0.0 | | | | |
| | 5 | | | | | | |
| | 6 | Increasing Fe stain | 0.0 | 2 | CL | | |
| | 7 | | | | | | |

PROJECT

CHAAP RIES

HOLE NO

19C-SB04D

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

19C-SB040

PROJECT

CHAAP RIES

INSPECTOR

A. Hedger

SHEET

SHEETS

3 OF 3

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|----------------|--------------|---|------------------------|--|---------------------------------|-------------------|------------------------------|
| | | See previous pag | | | | | |
| | 8 | Becomes soft, L. plastic,
increasing F. Sand,
Black streaks, L. DK
Gray (5y 3/1) | 6.0 | | CL | | Sample
19C-SB040
@ 900 |
| | 9 | | | | | | |
| | 10 | 5.5 Sand w/ Some Fines,
L. DK Gray (5y 3/1),
wet, non cohesive,
sub angular, sub rounded | 0.0 | 3 | 50 | | Σ
10.2 |
| | 11 | | | | | | |
| 900
6.13.18 | 17 | End of Boring @ 12' | | | | | |
| | 13 | | | | | | |

PROJECT

CHAAP RIES

HOLE NO

19C-SB040

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB06D</i> | |
|--|--|------------------------|---|--------------------------------|--------------------------------------|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | | SHEET
<i>1</i> OF <i>3</i> SHEETS | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | 4. LOCATION
<i>Truck 19L, CHAAP, Grand Island</i> | | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GGZ015 Geoprobe</i> | | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>GGZ015 Geoprobe</i>
<i>4' x 2" Dual Tube Sampler</i> | | | 8. HOLE LOCATION
<i>19C-SB06D</i> | | | | |
| | | | 9. SURFACE ELEVATION
<i>NA</i> | | | | |
| | | | 10. DATE STARTED
<i>6.12.18</i> | | 11. DATE COMPLETED
<i>6.12.18</i> | | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>10.5</i> | | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | | |
| 14. TOTAL DEPTH OF HOLE
<i>12</i> | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<i>2</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>3</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| <i>Manganese</i> | | | | | | 21. TOTAL CORE
% | |
| 22. DISPOSITION OF HOLE
<i>Sample / Abandon</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Wedgepelt</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="position: relative; width: 100%; height: 100%;"> <div style="position: absolute; top: 10%; left: 30%;">OGD stake</div> <div style="position: absolute; top: 15%; left: 30%;">○</div> <div style="position: absolute; top: 40%; left: 30%;">↓</div> <div style="position: absolute; top: 55%; left: 35%;">50'</div> <div style="position: absolute; top: 65%; left: 40%;">→</div> <div style="position: absolute; top: 65%; left: 45%;">55'</div> <div style="position: absolute; top: 65%; left: 55%;">○</div> <div style="position: absolute; top: 68%; left: 55%;">19C-SB06D</div> <div style="position: absolute; top: 10%; right: 10%;">N
↑</div> </div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>19C-SB06D</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB060 |
|--|--------------|--|---------------------------|--|---------------------------------|-------------------|--------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
D. Hedgepath | | | SHEET
2 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1425
6-12-18 | | Lean Clay w T. F. Sand
D-y, Cohesive, nonplastic,
m. dense, light gray
(Sy 7/1) | | | | NA | |
| | 1 | Becomes moist, L. plastic,
m. stiff | | | | | |
| | 2 | | 0.0 | 1 | CL | | |
| | 3 | | | | | | |
| | 4 | | 0.0 | | | | |
| | 5 | Increasing Fe/Black
Stain, soft, m. plastic | | | | | |
| | 6 | | 0.0 | 2 | CL | | |
| | 7 | | | | | | |

| | |
|-----------------------|----------------------|
| PROJECT
CHAAP RIES | HOLE NO
19C-SB060 |
|-----------------------|----------------------|

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB060 |
|--|--------------|---|------------------------|---|---------------------------------|-------------------|-------------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hedger | | | | SHEET
3 OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEO TECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | 8 | Turns Black (Sy 2.5/1)
moist, L. plastic, stiff | 0.0 | | | | |
| | 9 | | | | | | Sample
19C-SB060
@ 1430 |
| | 10 | | 0.0 | 3 | CL | | WL @ 10.5 |
| | 11 | F. Sand w/ Tr. Fines, F. to
M. Sand, med, sub angular,
sub rounded, L. Dk gray
(Sy 3/1), noncohesive | | | | | |
| 1430
6/12/18 | 12 | End of boring at 12' | | | | | |
| | 13 | | | | | | |

PROJECT
CHAAP RIES

HOLE NO
19C-SB060

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB07D</i> | |
|---|--|------------------------|--|---|--|--|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET
<i>1</i> OF <i>3</i> | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Truck 19L, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GG2015 Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>GG2015 Geoprobe
4' x 2" Dual Tube Sampler</i> | | | | 8. HOLE LOCATION
<i>19C-SB07D</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>6.12.18</i> | | 11. DATE COMPLETED
<i>6.12.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>10.0</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>12.0</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<i>L</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>3</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>RDX</i> | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| | | | | | | 21. TOTAL CORE
% | |
| 22. DISPOSITION OF HOLE
<i>Sample / Abandon</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Haddad</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="text-align: right; margin-bottom: 10px;">SCALE: <i>Not to Scale</i></div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>19C-SB07D</i> | |

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

19C-SB07D

PROJECT

CHAAP RIES

INSPECTOR

A. Hedger

SHEET

2 OF 3

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|-----------------|--------------|---|------------------------|--|---------------------------------|-------------------|----------------|
| 1410
6.12.18 | 1 | Lean Clay w/ Tr. F. Sand
Dry, Cohesive, non plastic,
m. dense, light Gray
(5, 3/1) | | | | NA | |
| | 2 | Becomes moist, m. plastic
Soft | 0.0 | 1 | CL | | |
| | 3 | | | | | | |
| | 4 | Same as above | 0.0 | — | | | |
| | 5 | | | | | | |
| | 6 | | 0.0 | 2 | CL | | |
| | 7 | Increasing Fe, m. stiff
V. DK Gray (5, 3/1) | | | | | |

PROJECT

CHAAP RIES

HOLE NO

19C-SB07D

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB07D |
|--|--------------|--|---------------------------|--|---------------------------------|-------------------|-------------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
D. Hedgerick | | | SHEET
3 | SHEETS
OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | | NA | |
| | 8 | Soft, Black (Sy 2.5/1)
m. plastic | 0.0 | | | | |
| | 9 | | | | | | Sample
19C-SB07D
@ 1420 |
| | 10 | F. Sand w/ T. Fines,
wet, non cohesive, m. dense,
Small to Fine, Sub angular
Sub rounded, Black
(Sy 2.5/1) | 0.0 | 3 | CL | | ✓
WL-10. |
| 1420
6.12.18 | 12 | End of boring at 12' | | | | | |
| | 23 | | | | | | |

PROJECT
CHAAP RIES

HOLE NO
19C-SB07D

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB10D</i> | |
|---|--|--|--|---|--|--|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET <i>1</i> OF <i>3</i> SHEETS | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Tract 19L, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GGZODT Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT | | <i>GGZODT Geoprobe</i>
<i>4"x2" Dual Tube Sampler</i> | | 8. HOLE LOCATION
<i>19C-SB10D</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>6.12.18</i> | | 11. DATE COMPLETED
<i>6.12.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>11.75</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>12'</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>3</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| <i>ARSENIC</i> | | | | | | 21. TOTAL CORE
% | |
| 22. DISPOSITION OF HOLE | | BACKFILLED | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>D. Hedgpeth</i> | |
| <i>Sample / Abandon</i> | | <i>X</i> | | | | | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| SCALE: <i>Not to Scale</i> | | | | | | | |
| | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>19C-SB10D</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB10D |
|--|--------------|--|-------------------------------------|--|---------------------------------|---------------------|--------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
D. Hedgerode | | | SHEET 2 OF 3 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d)
Hand spec | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1100
6.12.88 | | Topsoil, Loam clay, 5%
F. Sand, Dry, non cohesive
loose, light Gray (5y 7/1) | | | | NA | |
| | 1 | Becomes moist, stiff,
L. plastic | | | | | |
| | 2 | | 0.0 | 1 | CL | | |
| | 3 | | | | | | |
| | 4 | Same as above | 0.0 | | | | |
| | 5 | | | | | | |
| | 6 | Becomes Dark Gray (5y
4/1), Soft, m. plastic | 0.0 | 2 | CL | | |
| | 7 | | | | | | |

| | |
|-----------------------|----------------------|
| PROJECT
CHAAP RIES | HOLE NO
19C-SB10D |
|-----------------------|----------------------|

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB10D |
|--|--------------|--|-------------------------------------|---|---------------------------------|-------------------|---------------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hedgepeth | | | SHEET 3 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
Headspace
(d) | GEO TECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | | NA | |
| | 8 | | 0.0 | | | | |
| | 9 | | | | | | |
| | 10 | Becomes Black (Sy 2.5/1)
m. plastic, Fe stain, moist,
m. stiff | 0.0 | 3 | CL | | Collect
19C-SB10D
@ 11.05 |
| | 11 | | | | | | |
| 1105
6.12.18 | 12 | Sharp F. Sand, w. F. Fines, sub
Black (Sy 2.5/1) wet, non
End of boring at 12' | 0.0 | | | | Collect
@ 11.75' |
| | | | | | | | |

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB11D</i> | |
|--|--|--|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET <i>1</i> OF <i>3</i> SHEETS | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Truck 19L, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GGZODT Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT | | <i>GGZODT Geoprobe</i>
<i>4"x2" Dual Tube Sampler</i> | | 8. HOLE LOCATION
<i>19C-SB11D</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>6.12.18</i> | | 11. DATE COMPLETED
<i>6.12.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>11.8'</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>12'</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>3</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| <i>Iron</i> | | | | | | 21. TOTAL CORE
% | |
| 22. DISPOSITION OF HOLE | | BACKFILLED | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Hodgson</i> | |
| <i>Sample / Abandon</i> | | <i>X</i> | | | | | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="text-align: right;">SCALE: <i>Not to Scale</i></div> | | | | | | | |
| PROJECT: <i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>19C-SB11D</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB11D |
|--|--------------|--|------------------------------------|--|---------------------------------|-------------------|--------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
D. Hedgepeth | | | SHEET
2 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
STANDARD
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1115
6.12.18 | | Topsoil, Lean clay w/ Tr.
F Sand, Black S, 2.5/1
m. dense, Dry, Noncohesive | | | | NA | |
| | 1 | Becomes moist, stiff,
m. plastic, light Gray
(S, 7/1) w/ Tr. Small
gravel | | | | | |
| | 2 | | 0.0 | 1 | CL | | |
| | 3 | v. stiff | | | | | |
| | 4 | | 0.0 | | | | |
| | 5 | | | | | | |
| | 6 | Becomes soft w/ Tr
Fe stain, no more gravel | 0.0 | 2 | CL | | |
| | 7 | | | | | | |

PROJECT
CHAAP RIES

HOLE NO
19C-SB11D

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB11D |
|--|--------------|---|-------------------------------------|--|---------------------------------|-------------------|---------------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hedges | | | SHEET 3 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
Hand full
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | | NA | |
| | 8 | | 0.0 | | | | |
| | 9 | Soft, L. dk Gray (Sy 3/1)
moist, Fe / Black stain
Fen F. Sand | | | | | |
| | 10 | | 0.0 | 3 | CL | | |
| | 11 | | | | | | Collect
19C-SB11D
@ 11.25 |
| 1125
6/12/18 | 12 | F. Sand w. Tr. Fines, med, noncohesive
Black (Sy 2.5/1), Sub angular Sub rounded
End of boring at 12' | 0.0 | | | | ✓
wh @ 11.8' |
| | 13 | | | | | | |

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB03E</i> | |
|--|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | | SHEET
1 OF 3 | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Truck 19L, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GG2015 Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>GG2015 Geoprobe
4' x 2" Dual Tube Sampler</i> | | | | 8. HOLE LOCATION
<i>19C-SB03E</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>6.13.18</i> | | 11. DATE COMPLETED
<i>6.13.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>12.0</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>14'</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>4</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| <i>RDX Manganese</i> | | | | | | 21. TOTAL CORE
% | |
| 22. DISPOSITION OF HOLE
<i>Sample / Abandon</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Heedegard</i> | |
| <div style="display: flex; justify-content: space-between;"> <div>LOCATION SKETCH/COMMENTS</div> <div>SCALE: <i>Not to Scale</i></div> </div> <div style="text-align: center; margin-top: 20px;"> </div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>19C-SB03E</i> | |

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

19C-SB03E

PROJECT

CHAAP RIES

INSPECTOR

A. Heckendahl

SHEET

2

SHEETS

OF 3

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|----------------|--------------|--|------------------------|--|---------------------------------|-------------------|----------------|
| 935
6.13.18 | | No Recovery | | | | ~Δ | |
| | 1 | | | | | | |
| | 2 | | | 1 | | | |
| | 3 | | | | | | |
| | 4 | Lean Clay w/ F. Sand 0.0
moist, Fe stain, Soft,
L. plastic, Gray (S _y 5/11) | | | | | |
| | 5 | | | 2 | CL | | |
| | 6 | | | | | | |
| | 7 | | | | | | |

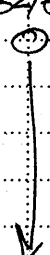
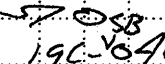

PROJECT

CHAAP RIES

HOLE NO

19C-SB03E

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB03E |
|--|--------------|---|--------------------------|---|---------------------------------|-------------------|-----------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hedgpeth | | | | SHEET
3 OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEO TECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | | | |
| | 8 | Gravel to v. dk
gray (5y 3/1), v. soft
L. plastic | 0.0 | | | | |
| | 9 | | | | | | |
| | 10 | | 0.0 | 3 | CL | | |
| | 11 | | | | | | Sample
19C-SB03E
e945 |
| | 12 | F. Sand L / Few fines,
Lth, non cohesive
v. dk gray (5y 3/1),
Sub angular, Sub rounded | 0.0 | | | | Σ
12.0 |
| | 13 | | | A | SP | | |
| 945
6-13-1814 | | End of boring at 14' | | | | | |

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB04E</i> | |
|---|--|------------------------|--|---|--|--|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET <i>1</i> OF <i>3</i> SHEETS | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Tract 19L, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GGZODT Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>GGZODT Geoprobe</i>
<i>4"x2" Dual Tube Sampler</i> | | | | 8. HOLE LOCATION
<i>19C-SB04E</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>6.13.18</i> | | 11. DATE COMPLETED
<i>6.13.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>12.9</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>19</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<i>✓</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>4</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>RDX</i> | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| | | | | | | 21. TOTAL CORE
% | |
| 22. DISPOSITION OF HOLE
<i>Sample / Abandon</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>D. Hedgcock</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="position: relative; width: 100%; height: 100%;"> <div style="position: absolute; top: 10%; left: 30%;"> <i>AE Stake</i>
  </div> <div style="position: absolute; top: 60%; left: 45%;">  </div> <div style="position: absolute; top: 45%; right: 10%;"> <i>SCALE: Not to Scale</i>
  </div> </div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>19C-SB04E</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB046 |
|--|--------------|--|------------------------|--|---------------------------------|-------------------|--------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hedger | | | SHEET
2 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 905
6.15.18 | | Lean Clay w. Tr F. Sand,
Gray (5y 5/1), Dry,
non cohesive, m. dense | | | | NA | |
| | 1 | | | | | | |
| | 2 | Gradual to silty clay
Topsoil, wet, non cohesive,
stiff, Dark Brown 10YR 3/3 | 0.0 | 1 | CL | | |
| | 3 | | | | | | |
| | 4 | | 0.0 | | | | |
| | 5 | Sharp transition to
Lean clay w Tr F. Sand,
Fe stain, Gray (5y 5/1),
stiff, m. plastic, moist | | | | | |
| | 6 | | 0.0 | 2 | CL | | |
| | 7 | | | | | | |

PROJECT
CHAAP RIES

HOLE NO
19C-SB046

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

19C-SB046

PROJECT

CHAAP RIES

INSPECTOR

A. Hedger

SHEET

3

SHEETS

OF 3

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|----------------|--------------|--|------------------------|--|---------------------------------|-------------------|-----------------------------|
| | | Same as above | | | | NA | |
| | 8 | | 0.0 | | | | |
| | 9 | | | | | | |
| | 10 | | 0.0 | 3 | CL | | |
| | 11 | Becomes v Dk Gray
(Sy 3/1), soft, m. plastic | | | | | |
| | 12 | | 0.0 | | | | Sample
19C-SB046
#915 |
| | 13 | Fine to M. Sand w/
Fr. Finos, wet, non cohesive
Sub angular / sub rounded
v. Dk Gray (Sy 3/1) | | A | SP | | 12.9 |
| 915
6.13.18 | 14 | End of boring at 14' | | | | | |

PROJECT

CHAAP RIES

HOLE NO

19C-SB046

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB05E</i> | |
|---|--|---|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET <i>1</i> OF <i>3</i> | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Tract 19L, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GGZ015 Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>GGZ015 Geoprobe</i>
<i>4"x2" Dual Tube Sampler</i> | | | | 8. HOLE LOCATION
<i>19C-SB05E</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>6.13.18</i> | | 11. DATE COMPLETED
<i>6.13.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>11.1</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>121</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<input checked="" type="checkbox"/> | | 19. TOTAL NUMBER OF CORE BOXES
<i>3</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>Manganese</i> | | VOC | | METALS
<input checked="" type="checkbox"/> | | OTHER (SPECIFY)
<i>Explosives</i> | |
| 22. DISPOSITION OF HOLE
<i>Sample / Abandon</i> | | BACKFILLED
<input checked="" type="checkbox"/> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>D. Hodgepohl</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="text-align: right;">SCALE: <i>Not to Scale</i></div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>19C-SB05E</i> | |

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

19C-SB05E

PROJECT

CHAAP RIES

INSPECTOR

A. Hedger

SHEET

SHEETS

2 OF 3

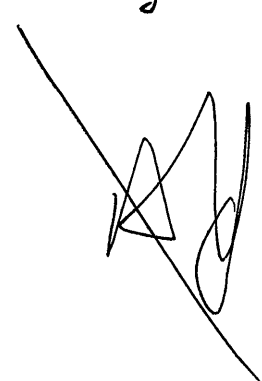
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEO TECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|----------------|--------------|--|------------------------|---|---------------------------------|-------------------|----------------|
| 830
6.13.18 | 1 | Loam Clay w/ F. F. Sand,
Dry, noncohesive, Gray
(Sy 5/1) | | | | | |
| | 2 | Becomes moist, stiff,
m. plastic, Fe stain | 0.0 | 1 | CL | | |
| | 3 | | | | | | |
| | 4 | Same as above | 0.0 | | | | |
| | 5 | | | | | | |
| | 6 | | 0.0 | 2 | CL | | |
| | 7 | | | | | | |

PROJECT

CHAAP RIES

HOLE NO

19C-SB05E

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB05E |
|--|--------------|---|---------------------------|--|---------------------------------|-------------------|------------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hedgepeth | | | | SHEET
3 OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous pg | | | | | |
| | 8 | — — | 0.0 | — | | — | — |
| | 9 | Becomes v. Dk gray
sy (3/1), w/ some
F. Sand, Fe stain | | | | | |
| | 16 | | 0.0 | 3 | CL | | Sample
19C-SB05E
@ 840 |
| | 11 | F. Sand w/ Some Fines
wet, ^{more} cohesive, v. Dk gray
(sy 3/1), subangular/subrounded | | | | | Σ
11.1 |
| 840
6-13-18 | 17 | End of Boring @ 12' | | | | | |
| | 13 |  | | | | | |

PROJECT
CHAAP RIES

HOLE NO
19C-SB05E

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB08E</i> | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET <i>1</i> OF <i>3</i> | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Trail 19L, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GGZODT Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>GGZODT Geoprobe
4'x2" Dual Tube Sampler</i> | | | | 8. HOLE LOCATION
<i>19C-SB</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>6.12.18</i> | | 11. DATE COMPLETED
<i>6.12.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>11.1</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>12'</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>3</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| <i>Iron / Manganese</i> | | | | | | 21. TOTAL CORE
% | |
| 22. DISPOSITION OF HOLE
<i>Sample / Abandon</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>D. Hodgepohl</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="text-align: right;">SCALE: <i>Not to Scale</i></div> | | | | | | | |
| <div style="text-align: right;">SCALE: <i>Not to Scale</i></div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | HOLE NO
<i>19C-SB08E</i> | | | |

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

19C-SB08E

PROJECT

CHAAP RIES

INSPECTOR

J. Hodge

SHEET

2

SHEETS

OF 3

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|----------------|--------------|--|------------------------|--|---------------------------------|-------------------|----------------|
| 1445
6.1210 | | Lean Clay w/ Tr. F. Sand
Dry, noncohesive, light
Gray (Sy 7/1), m. dense | | | | NA | |
| | 1 | | | | | | |
| | 2 | | 0.0 | 1 | CL | | |
| | | Becomes moist, low plastic
m. stiff | | | | | |
| | 3 | | | | | | |
| | 4 | | 0.0 | | | | |
| | 5 | | | | | | |
| | 6 | Becomes Dark Gray
(Sy 4/1), soft, m. plastic
w/ Fe Stain/Black Slit | 0.0 | 2 | CL | | |
| | 7 | | | | | | |

PROJECT

CHAAP RIES

HOLE NO

19C-SB08E

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

19C-SB086

PROJECT

CHAAP RIES

INSPECTOR


D. Hodge

SHEET

3

SHEETS

OF 3

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|----------------|--------------|--|------------------------|--|---------------------------------|-------------------|------------------------------|
| | | See previous page | | | | | |
| | 8 | _____ | 0.0 | _____ | | | |
| | 9 | Increasing Fe stain | | | | | |
| | 10 | Becomes Black (Sy 2.5/1),
Soft, L. plastic | 0.0 | 3 | CL | | Collect
19C-SB086
@HSD |
| | 11 | | | | | | |
| | | F. Sand w/ Tr. Fines, wet,
non cohesive, sub angular,
sub rounded, loose
Black Sy 2.5/1 | | | | | WL 11.1 |
| 1450
6/2-18 | 12 | End of boring @ 12' | | | | | |
| | 13 |  | | | | | |

PROJECT

CHAAP RIES

HOLE NO

19C-SB086

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB05F</i> | |
|---|--|--|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | | SHEET
1 OF 3 | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Tract 19C, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GG2015 Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT | | <i>GG2015 Geoprobe</i>
<i>4"x2" Dual Tube Sampler</i> | | 8. HOLE LOCATION
<i>19C-SB05F</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>6.17.18</i> | | 11. DATE COMPLETED
<i>6.13.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>12.1</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>14</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>1</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| <i>Manganese</i> | | | | | | 21. TOTAL CORE
% | |
| 22. DISPOSITION OF HOLE | | BACKFILLED | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Hodge</i> | |
| <i>Sample / Abandon</i> | | <i>X</i> | | | | | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="text-align: right; margin-bottom: 10px;">SCALE: <i>Not to Scale</i></div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>19C-SB05F</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB05F |
|--|--------------|---|------------------------|--|---------------------------------|-------------------|--------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hedges | | | SHEET
2 | SHEETS
OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 820
6.13.18 | | Loam clay w/ F. F. Sand,
D-1, non cohesive, Grey
(S, S/I), m. dense | | | | NA | |
| | 1 | Becomes moist, soft,
m. plastic, Fe stain | | | | | |
| | 2 | | 0.0 | 1 | CL | | |
| | 3 | | | | | | |
| | 4 | Same as above - | 0.0 | | | | |
| | 5 | | | | | | |
| | 6 | | 0.0 | 2 | CL | | |
| | 7 | | | | | | |

PROJECT
CHAAP RIES

HOLE NO
19C-SB05F

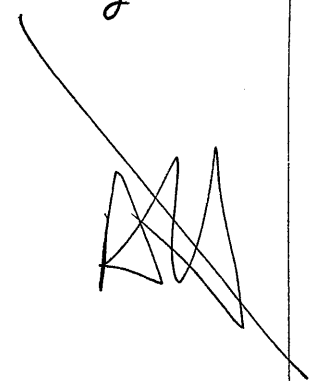
| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB05F |
|--|--------------|---|---------------------------|--|---------------------------------|-------------------|------------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hedgepeth | | | | SHEET
3 OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | | | |
| | 8 | | 0.0 | | | | |
| | 9 | Becomes soft, L. plastic,
Block Sy 2.5/1, w/
Block streaks | | | | | |
| | 10 | | 0.0 | 3 | CL | | |
| | 11 | | | | | | Sample
19C-SB05F
@ 825 |
| | 12 | | 0.0 | | | | |
| | 13 | F. Sand w/ Tr. Fines, not
cohesive, Subangular,
Sub rounded Dk grey
(Sy 6/1) | | 4 | SP | | 12.1 |
| 825
6-13-18 | 14 | End of Boring | | | | | |

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB10F</i> | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET <i>1</i> OF <i>3</i> | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Tract 19C, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GGZODT Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>GGZODT Geoprobe</i>
<i>4"x2" Dual Tube Sampler</i> | | | | 8. HOLE LOCATION
<i>19C-SB10F</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>6.12.18</i> | | 11. DATE COMPLETED
<i>6.12.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>-11.0'</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>12'</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>3</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>Cobalt</i> | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| 22. DISPOSITION OF HOLE
<i>Sample / Abandon</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepeth</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="text-align: right; margin-bottom: 10px;">SCALE: <i>Not to Scale</i></div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>19C-SB10F</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB10F |
|--|--------------|---|------------------------------------|--|---------------------------------|-------------------|--------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hedgcock | | | SHEET
2 | SHEETS
OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
Hedgcock
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1045
6/2/18 | | Topsoil, Dry, lean clay,
w. f. sand, light
Gray (Sy 7/1), noncohesive
m. dense | | | | NA | |
| | 1 | | | | | | |
| | 2 | Becomes moist, l. plastic
m. stiff | 0.0 | 1 | CL | | |
| | 3 | | | | | | |
| | 4 | Same as above | 0.0 | | | | |
| | 5 | | | | | | |
| | 6 | moist, increasing s-s stain
m. plastic, soft | 0.0 | 1 | CL | | |
| | 7 | | | | | | |

PROJECT
CHAAP RIES

HOLE NO
19C-SB10F

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB10F |
|--|--------------|--|--------------------------------------|--|---------------------------------|-------------------|------------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hedgepeth | | | SHEET
3 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d)
Hecoxpelle | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | | NA | |
| | 8 | Soft, m. plastic, v. dk gray (Sy 311) | 6.0 | | | | |
| | 9 | | | | | | |
| | 10 | Dry to moist, stiff, L. Plastic, Block Sy 2.5/1 | 0.0 | 3 | CL | | |
| | 11 | Abrupt F. Sand, fr. fines wet, dense, non cohesive, sub angular / sub rounded Block 2.5/1 (Sy 2.5/1) | | | | WL-11. | Sample 19C-10F-SB10F @ 10.55 |
| 10.55
6-12-8 | 12 | End of Boring @ 12' | 0.0 | | | | |
| | 13 |  | | | | | |

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB036</i> | |
|---|--|------------------------|---|--------------------------------|--------------------------------------|--|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | 2. DRILLING CONTRACTOR
<i>GSS Engineering</i> | | | SHEET <i>1</i> OF <i>3</i> | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | 4. LOCATION
<i>Tract 19C, CHAAP, Grand Island</i> | | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GGZODT Geoprobe</i> | | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>GGZODT Geoprobe
4"x2" Dual Tube Sampler</i> | | | 8. HOLE LOCATION
<i>19C-SB036</i> | | | | |
| | | | 9. SURFACE ELEVATION
<i>NA</i> | | | | |
| | | | 10. DATE STARTED
<i>6.13.18</i> | | 11. DATE COMPLETED
<i>6.13.18</i> | | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>11.7</i> | | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | | |
| 14. TOTAL DEPTH OF HOLE
<i>12'</i> | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<i>2</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>3</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| <i>Iron</i> | | | | | | 21. TOTAL CORE
% | |
| 22. DISPOSITION OF HOLE
<i>Sample / Abandon</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedger</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="text-align: right;">SCALE: <i>Not to Scale</i></div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>19C-SB036</i> | |

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

19C-SB03G

PROJECT

CHAAP RIES

INSPECTOR

A. Hedgeroch

SHEET

SHEETS

2 OF 3


| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|------------------------|--|---------------------------------|-------------------|----------------|
| 755
613.0 | | Loam clay w/ Tr. F. Sand,
non cohesive, dry, m. dense | | | | NA | |
| | 1 | Becomes moist, m. plastic
m. stiff, gray (S, 5/1)
fine skin | | | | | |
| | 2 | | 0.0 | 1 | CL | | |
| | 3 | | | | | | |
| | 4 | Same as above | 0.0 | | | | |
| | 5 | | | | | | |
| | 6 | | 0.0 | 2 | CL | | |
| | 7 | | | | | | |

PROJECT

CHAAP RIES

HOLE NO

19C-SB03G

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB036 |
|--|--------------|---|--------------------------|---|---------------------------------|-------------------|------------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
N. Hadjipol | | | SHEET
3 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEO TECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | | ND | |
| | 8 | — — | 0.0 | — | | | |
| | 9 | | | | | | |
| | 10 | Becomes v. Dk Gray
(5y 3/1), no Fe stain | 0.0 | 3 | CL | | Sample
19C-SB036
@ 800 |
| | 11 | | | | | | |
| 800
7.13.18 | 12 | F. Sand & Tr/Fines, med, non cohesive,
sub angular / sub rounded
End of Boring at 12' | | | | | Σ
11.7 |
| | 13 |  | | | | | |

PROJECT
CHAAP RIES

HOLE NO
19C-SB036

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SBOS6</i> | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET <i>1</i> OF <i>3</i> SHEETS | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Tract 19L, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GGZODT Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>GGZODT Geoprobe</i>
<i>4"x2" Dual Tube Sampler</i> | | | | 8. HOLE LOCATION
<i>19C-SBOS G</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>6-13-18</i> | | 11. DATE COMPLETED
<i>6-13-18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>4.7 11.4'</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>12'</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<i>2</i> | | 19. TOTAL NUMBER OF CORE BOXES | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>RDB</i> | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| | | | | | | 21. TOTAL CORE
% | |
| 22. DISPOSITION OF HOLE
<i>Sample / Abandon</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>D. Redgepelt</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="text-align: right; margin-bottom: 10px;">SCALE: <i>Not to Scale</i></div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>19C-SBOS G</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB05G |
|--|--------------|--|---------------------------|---|---------------------------------|-------------------|--------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hedengren | | | | SHEET
2 OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEO TECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 805
6.13.18 | | Lean clay w/ Tr. F. Sand
Dry, non cohesive, m.
dense, light Gray (Sy 7/11) | | | | | |
| | 1 | Becomes moist, Fe
stain, Black stain, stiff,
L. plastic | | | | | |
| | 2 | | 0.0 | 1 | CL | | |
| | 3 | | | | | | |
| | 4 | M. stiff, same as above
Increase Fe stain | 0.0 | | | | |
| | 5 | | | | | | |
| | 6 | | 0.0 | 2 | CL | | |
| | 7 | | | | | | |

PROJECT
CHAAP RIES

HOLE NO
19C-SB05G

HTRW DRILLING LOG

(CONTINUATION SHEET)

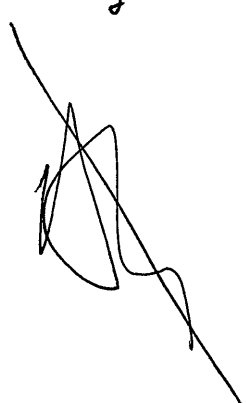
HOLE NUMBER
19C-SB056
SHEET **3** OF **3** SHEETS

PROJECT

CHAAP RIES

INSPECTOR

A. Redgepoh

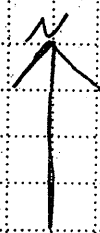
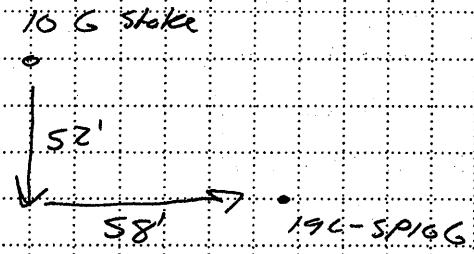
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|----------------|--------------|---|------------------------|--|---------------------------------|-------------------|------------------------------|
| | | See previous page | | | | ~A | |
| | 8 | — — — — — | 0.0 | — — — — — | — — — — — | | |
| | 9 | Sharp to Block (S.Y.S.I.)
Soft, moist to wet,
Lean Clay w/ F. Sand,
Few organics | | | | | |
| | 10 | | 0.0 | 3 | CL | | Sample
19C-SB056
@ 810 |
| | 11 | | | | | | |
| | | gradual to F. Sand w/ fines
wet, sub angular/sub rounded,
non cohesive | | | | | 11.4 |
| 810
6.13.18 | 12 | End of Boring @ 12' | | | | | |
| | 13 |  | | | | | |
| | 14 | | | | | | |

PROJECT

CHAAP RIES

HOLE NO

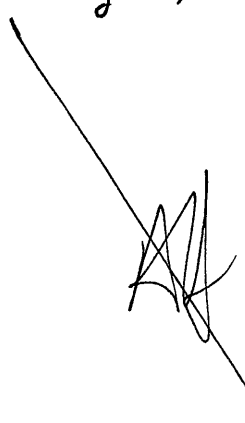
19C-SB056

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB106</i> | |
|--|--|--------------------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET <i>1</i> OF <i>3</i> | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Trut 19L, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GGZODT Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>GGZODT Geoprobe</i>
<i>4"x2" Dual Tube Sampler</i> | | 8. HOLE LOCATION
<i>19C-SB106</i> | | | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>6.12.18</i> | | 11. DATE COMPLETED
<i>6.12.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>11.75</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>12</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<i>2</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>3</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>Cobalt</i> | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| 22. DISPOSITION OF HOLE
<i>Sample / Abandon</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Hodgepeth</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="text-align: right; margin-bottom: 10px;">SCALE: <i>Not to Scale</i></div> <div style="text-align: right; margin-bottom: 20px;">  </div> <div style="text-align: center;">  </div> | | | | | | | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB106 |
|--|--------------|--|-------------------------------------|--|---------------------------------|-------------------|--------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hodgepote | | | | SHEET
2 OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
Headspace
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1025
6.12.8 | | Topsoil, v. Dk Bruy
(Sy 3/1) | | | | NA | |
| | 1 | | | | | | |
| | 2 | | 0.0 | 1 | CL | | |
| | 3 | Becomes moist lean clay
w/ Tr. F. Sand & Fe staining
Gry (Sy 5/1), m. plastic
Stiff | | | | | |
| | 4 | Same as above | 0.0 | | | | |
| | 5 | | | | | | |
| | 6 | | 0.0 | 2 | CL | | |
| | 7 | | | | | | |

PROJECT
CHAAP RIES

HOLE NO
19C-SB106

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB106 |
|--|--------------|---|---------------------------|--|---------------------------------|-------------------|------------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hedgepeth | | | | SHEET
3 OF SHEETS |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | | NA | |
| | 8 | — — — — — | 0.0 | — | | — | |
| | 9 | Sharp transition to
Lean Clay in F. Sand | | | | | |
| | 10 | Dry to moist, L. plastic,
Stiff, Black (5y 2.5/1),
w Fe stain & white flecks. | 0.0 | 3 | CL | | |
| | 11 | | | | | | Sample
19C-106
@ 10.35 |
| 1035
6/12/18 | 12 | Sharp Break to F. Sand
w / F. Fines, wet, noncohesive
m. dense, Black (5Y 2.5/1)
End of boring @ 12' | 0.0 | | | | 11.75 |
| | 13 |  | | | | | |
| | 14 | | | | | | |

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB116</i> | |
|--|--|--|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET <i>1</i> OF <i>3</i> SHEETS | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Trut 19L, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GGZODT Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT | | <i>GGZODT Geoprobe</i>
<i>4"x2" Dual Tube Sampler</i> | | 8. HOLE LOCATION
<i>19C-SB116</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>6.12.18</i> | | 11. DATE COMPLETED
<i>6.12.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>11.75</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>12'</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>3</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| <i>Manganese</i> | | | | | | 21. TOTAL CORE
% | |
| 22. DISPOSITION OF HOLE | | BACKFILLED | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Hodgepohl</i> | |
| <i>Sample / Abandon</i> | | <i>X</i> | | | | | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="text-align: right;">SCALE: <i>Not to Scale</i></div> | | | | | | | |
| PROJECT: <i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>19C-SB 116</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|--|------------------------|--|---------------------------------|-------------------|----------------|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIES | | | A. Heedepath | | | 2 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1000
6.12.18 | | Topsoil, loose, noncohesive,
Dry, G-ey (Sy 5/11) | | | | NA | |
| | 1 | | | | | | |
| | 2 | | 0.0 | 1 | CL | | |
| | 3 | | | | | | |
| | 4 | Lean clay w Gr. F. Sand
+ Gr. Fe stain, moist,
stiff, low plastic
Dark G-ey Sy 4/11 | 0.0 | | | | |
| | 5 | | | | | | |
| | 6 | | 0.0 | 2 | CL | | |
| | 7 | | | | | | |
| PROJECT | | | | | | HOLE NO | |
| CHAAP RIES | | | | | | 19C-SB116 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB116 |
|--|--------------|--|------------------------|---|---------------------------------|-------------------|--|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hedger | | | | SHEET
3 OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH. SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | | NA | |
| | 8 | Same as above | 0.0 | | | | |
| | 9 | | | | | | |
| | 10 | Lean Clay w Tr. F. Sand,
L. plastic, Soft, Black
(S _y 2.5/1), moist, Tr.
Fe stain/mottle | 0.0 | 3 | CL | | |
| | 11 | | | | | | |
| 1005
6.12.18 | 12 | F. Sand w Tr. Fine S, wet,
noncohesive, Black (S _y 2.5/1) | 0.0 | | | | Sample
19C-SB116
@ 1005
WL 211.75 |
| | | End of boring at 12' | | | | | |
| | 13 | | | | | | |
| | 14 | | | | | | |

PROJECT
CHAAP RIES

HOLE NO
19C-SB116

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB04A</i> | |
|---|--|--|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET 1 OF 3 SHEETS | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Tract 19L, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GGZ015 Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT | | <i>GGZ015 Geoprobe</i>
<i>4"x2" Dual Tube Sampler</i> | | 8. HOLE LOCATION
<i>19C-SB04A</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>6-13-18</i> | | 11. DATE COMPLETED
<i>6-13-18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>11.6</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>12</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>3</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| <i>Nitrobenzene / Mercaptane</i> | | | | | | 21. TOTAL CORE
% | |
| 22. DISPOSITION OF HOLE | | BACKFILLED | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepeth</i> | |
| <i>Sample / Abandon</i> | | <i>X</i> | | | | | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="position: relative; width: 100%; height: 100%;"> <div style="position: absolute; top: 10%; left: 30%;"> <i>CHAAP Stake</i>
 </div> <div style="position: absolute; top: 40%; left: 45%;"> </div> <div style="position: absolute; top: 60%; left: 45%;"> <i>19C-SB04A</i> </div> <div style="position: absolute; top: 10%; right: 10%;"> </div> </div> | | | | | | | |
| SCALE: <i>Not to Scale</i> | | | | | | | |
| PROJECT: <i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>19C-SB04A</i> | |

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

19C-SB04H

PROJECT

CHAAP RIES

INSPECTOR

K. Hedgerpohl

SHEET

SHEETS

2 OF 3

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|----------------|--------------|---|------------------------|--|---------------------------------|-------------------|----------------|
| 716
6.13.18 | 1 | Low Recovery ~15%
Lean Clay L/Tr. F Sand
Dry to moist, Soft,
cohesive, m. plastic,
light Gray (Sy 7/1),
Fe stain | 0.0 | 1 | CL | ND | |
| | 2 | | | | | | |
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PROJECT

CHAAP RIES

HOLE NO

19C-SB04H

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB04H |
|--|--------------|---|--------------------------|--|---------------------------------|-------------------|------------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hedgpeth | | | | SHEET
3 OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | | | |
| | 8 | Same as above | 0.0 | | | | |
| | 9 | Becomes Black (5y 2.5/1) | | | | | |
| | 10 | | 0.0 | 3 | CL | | |
| | 11 | | | | | | Sample
19C-SB04H
@ 750 |
| | 12 | Sharp to F. Sand w/ 1% fines
sub angular/sub rounded, w/ 1%
non cohesive, v. dk grey (5y 3/1) | | | | | 11.6 |
| 750
6.13.18 | 12 | End of Boring @ 12' | | | | | |
| | 13 | | | | | | |

PROJECT
CHAAP RIES

HOLE NO
19C-SB04H

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB11H</i> | |
|---|--|------------------------|--|---|--|--|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSI Engineering</i> | | SHEET <i>1</i> OF <i>3</i> SHEETS | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Tract 19L, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GGZODT Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>GGZODT Geoprobe
4"x2" Dual Tube Sampler</i> | | | | 8. HOLE LOCATION
<i>19C-SB11H</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>6.12.18</i> | | 11. DATE COMPLETED
<i>6.12.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>~11.5'</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>12'</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED
<i>NA</i> | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>3</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>ROX</i> | | VOC
<i>NA</i> | | METALS
<i>NA</i> | | OTHER (SPECIFY)
<i>Explosives</i> | |
| 22. DISPOSITION OF HOLE
<i>Sample / Abandon</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgpeth</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| SCALE: <i>Not to Scale</i> | | | | | | | |
| | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>19C-SB11H</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB11H |
|--|--------------|---|-------------------------------------|--|---------------------------------|-------------------|--------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
D. Hedgpeth | | | SHEET
2 | SHEETS
OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d)
Headspace | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 990
6-12-18 | 0 | Dry Topsoil, non cohesive. | | | | NA | |
| | 1 | Silty clay w Tr. F Sand,
moist, m. plastic, m. stiff
Dark Gray (Sy 4/1) | | | | | |
| | 2 | | 0.0 | 1 | CL | | |
| | 3 | | | | | | |
| | 4 | Same as above w/
Tr. Fe stain | 0.0 | | | | |
| | 5 | | | | | | |
| | 6 | 5mm Sharp F. Sand lens,
loose, non cohesive wet
Same as before | 0.0 | 2 | CL | | |
| | 7 | | | | | | |

PROJECT
CHAAP RIES

HOLE NO
19C-SB11H

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
19C-SB11H |
|--|--------------|---|-------------------------------------|--|---------------------------------|-------------------|---------------------------------------|
| PROJECT
CHAAP RIES | | | INSPECTOR
A. Hedgcock | | | SHEET
3 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
Heedspole
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | Same as above | | 2 | CL | NA | |
| | 8 | See previous | 0.0 | | | | |
| | 9 | | | 3 | CL | | |
| | 10 | Lean clay w Tr. F. Sand,
Soft, m. plastic, moist
v. Dk Gray Sy 3/1 | 0.0 | | | | Sample
19C-SB11H @ 9.45
For RDX |
| | 11 | | | | | | |
| | 12 | F. Sand, w Tr. Fine S, med
Dense, non cohesive,
v. Dk Gray (Sy 2.5/1) | 0.0 | | | | Wet at Contact
@ 11.5 |
| 955
6.12.18 | | End of boring at 12' | | | | | |

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE Omaha</i> | | HOLE NUMBER
<i>19C-SB043</i> | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSI Engineering</i> | | SHEET <i>1</i> OF <i>3</i> | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Tract 19L, CHAAP, Grand Island</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>GGZODT Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>GGZODT Geoprobe</i>
<i>4"x2" Dual Tube Sampler</i> | | | | 8. HOLE LOCATION
<i>19C-SB043</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>6.13.14</i> | | 11. DATE COMPLETED
<i>6.13.14</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>11.2</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>12</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>3</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY)
<i>Explosives</i> | |
| <i>Nitrobenzene</i> | | | | | | | |
| 22. DISPOSITION OF HOLE
<i>Sample / Abandon</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Hodgepott</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="text-align: right; margin-bottom: 10px;">SCALE: <i>Not to Scale</i></div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>19C-SB043</i> | |

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

19C-SB042

PROJECT

CHAAP RIES

INSPECTOR

A. Redgepdl

SHEET

SHEETS

2 OF 3

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|----------------|--------------|---|------------------------|--|---------------------------------|-------------------|----------------|
| 715
6.13.18 | | Lean clay w. F. Sand
Fe stain, noncohesive, Dry,
m. Firm, light Gray (by 711) | | | | NA | |
| | 1 | Becomes moist, m. stiff,
m. plastic, Fe stain | | | | | |
| | 2 | | 0.0 | 1 | CL | | |
| | 3 | | | | | | |
| | 4 | Same as above | 0.0 | | | | |
| | 5 | | | | | | |
| | 6 | | 0.0 | 2 | CL | | |
| | 7 | | | | | | |

PROJECT

CHAAP RIES

HOLE NO

19C-SB043

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

19C-SB042

PROJECT

CHAAP RIES

INSPECTOR

D. Hedgepeth

SHEET

3 OF 3

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|----------------|--------------|---|------------------------|--|---------------------------------|-------------------|---|
| | | See previous page | | | | | |
| | 8 | | 0.0 | | | | |
| | 9 | Becomes v Dk Gray
(5y 3/1), Black stain,
Soft, m plastic | | | | | Sample
19C-SB043
@ 725
fms/msd |
| | 10 | | 0.0 | 3 | CL | | |
| | 11 | F 10 m. Sand w/ Fr. Fines
Lst, noncohesive, m. dense,
v. Dk Gray (3/1 5y) | | | | | Σ
CL @ 11.2 |
| 725
6.13.18 | 12 | End of boring at 12' | | | | | |
| | 13 | | | | | | |
| | 14 | | | | | | |

PROJECT

CHAAP RIES

HOLE NO

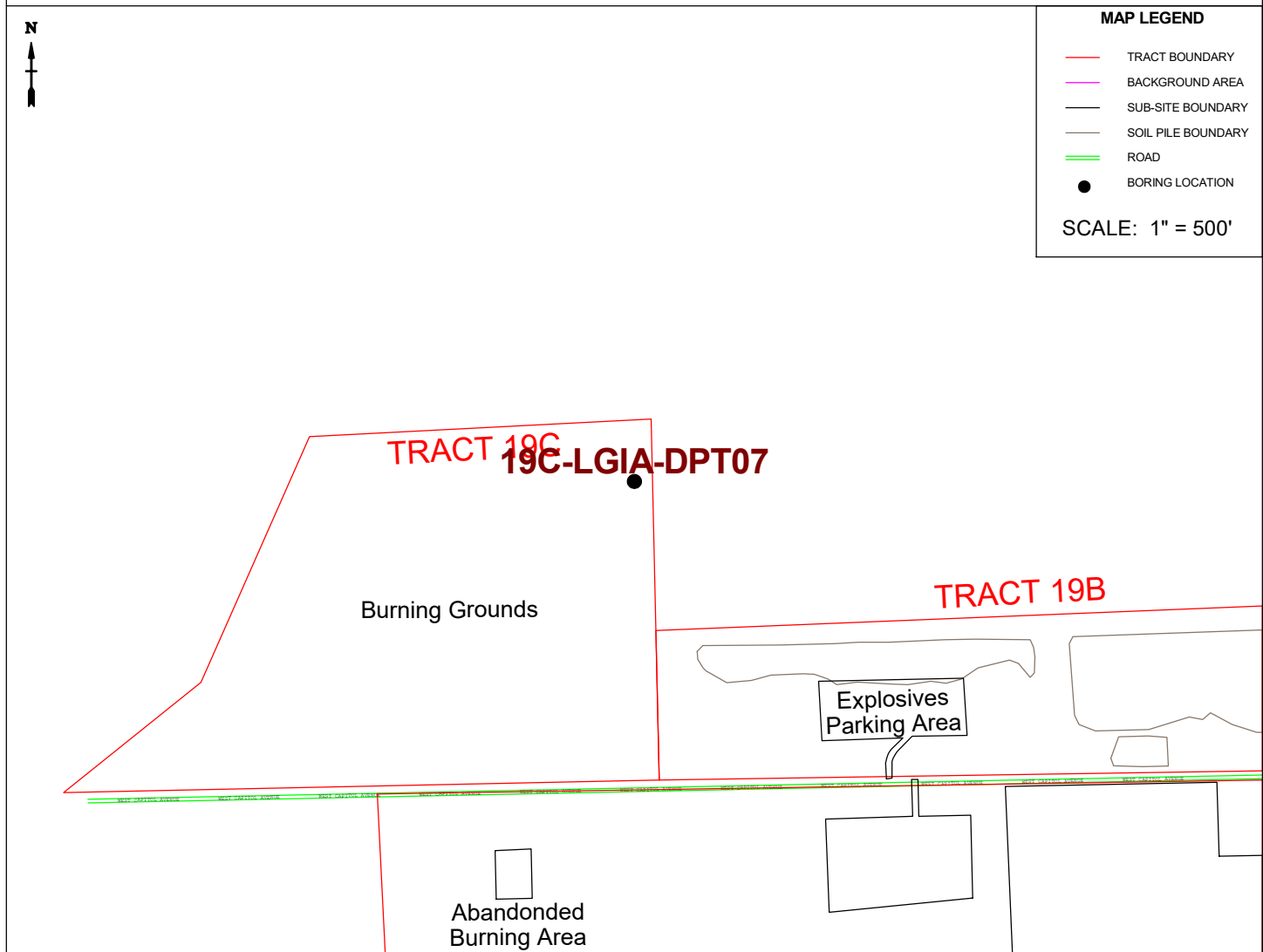
19C-SB042

Tract 19C Boring Logs
DPT Borings

| | | | | | |
|--|-------------------|---|---------------------------------------|----------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19C-LGIA-DPT07 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 5 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
M. Wold | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
409731.8 North 2049072.5 East | | | |
| | | 9. SURFACE ELEVATION
-- | | | |
| | | 10. DATE STARTED
5/1/2018 | 11. DATE COMPLETED
5/1/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
14 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
N/A | | | |
| 14. TOTAL DEPTH OF HOLE
35.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
5.5 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
-- | OTHER (SPECIFY)
Lithology Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



| | |
|--|----------------------------|
| PROJECT CHAAP Grand Island, Nebraska | HOLE NO 19C-LGIA-DPT07 |
|--|----------------------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-DPT07

| PROJECT | | DISTRICT | | FIELD SCREENING RESULTS | | | GEOTECH SAMPLE OR CORE BOX NO. | | ANALYTICAL SAMPLE NO. | | BLOW COUNT | | REMARKS | |
|--------------|--------------|---|--|--|--|-----------------------------------|--------------------------------|-------------------|-----------------------|--------------|------------|----------------|---------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | RESULTS
(d) | | OR CORE BOX NO.
(e) | | SAMPLE NO.
(f) | | COUNT
(g) | | REMARKS
(h) | | |
| | 0 | Topsoil | | | | | | | | | | | | |
| | 1 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | | | | | | | | | | | | |
| | 2 | | | | | | | | | | | | | |
| | 3 | | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | |
| | 9 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | | SS 1
8.5-10.5 ft.
100% Rec. | | | | 1 | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-DPT07

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-DPT07

| PROJECT | CHAAP, Grand Island, Nebraska | DISTRICT | US Army Corps of Engineers - Omaha District | | | | SHEET 3 OF 5 SHEETS |
|--------------|-------------------------------|---|---|--|---------------------------------|-------------------|---------------------|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) (continued) | | | | 1 | |
| | | | | | | 2 | |
| | 10 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained mottles. (5GY 4/1) | | | | 4 | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
10.5-12.5 ft.
100% Rec. | | 3 | |
| | 11 | | | | | 3 | |
| | | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained mottles. (10Y 3/1) | | | | 4 | |
| | 12 | | | | | 6 | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
12.5-14.5 ft.
100% Rec. | | 4 | |
| | 13 | | | | | 6 | |
| | | | | | | 6 | |
| | 14 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | 9 | |
| | 15 | | | | | | |
| | 16 | | | | | | |
| | 17 | | | | | | |
| | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-DPT07

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-DPT07

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | | SHEET 4 OF 5 SHEETS | |
|--------------|--------------|---|--|---|---------------------------------|-------------------|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| | 18 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
18.5-20.5 ft.
100% Rec. | | 6 | | | |
| | 19 | | | | | 8 | | | |
| | | | | | | 9 | | | |
| | 20 | | | | | 9 | | | |
| | 21 | | | | | | | | |
| | 22 | | | | | | | | |
| | 23 | | | | | | | | |
| | 24 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
23.5-25.5 ft.
100% Rec. | | 5 | | | |
| | | | | | | 5 | | | |
| | | | | | | 6 | | | |
| | 25 | | | | | 7 | | | |
| | 26 | | | | | | | | |
| | 27 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-DPT07

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-DPT07

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 5 | | 5 | | 5 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| | 27 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | | | | | | | | |
| | 28 | | | | | | | | | | |
| | 29 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
28.5-30.5 ft.
100% Rec. | | 6 | | | | | |
| | 30 | | | | | 8 | | | | | |
| | 31 | | | | | 8 | | | | | |
| | 32 | | | | | 9 | | | | | |
| | 33 | (CL) LEAN CLAY (90%): Low to medium plasticity, medium toughness, medium dry strength, no dilatancy, slightly moist, fine sand (10%). (5GY 5/1) | | | | | | | | | |
| | 34 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 7
33.5-35.5 ft.
100% Rec. | | 4 | | | | | |
| | 35 | | | | | 6 | | | | | |
| | 36 | | | | | 8 | | | | | |
| | | Bottom of Borehole @ 35.5 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 14-33 ft | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-DPT07

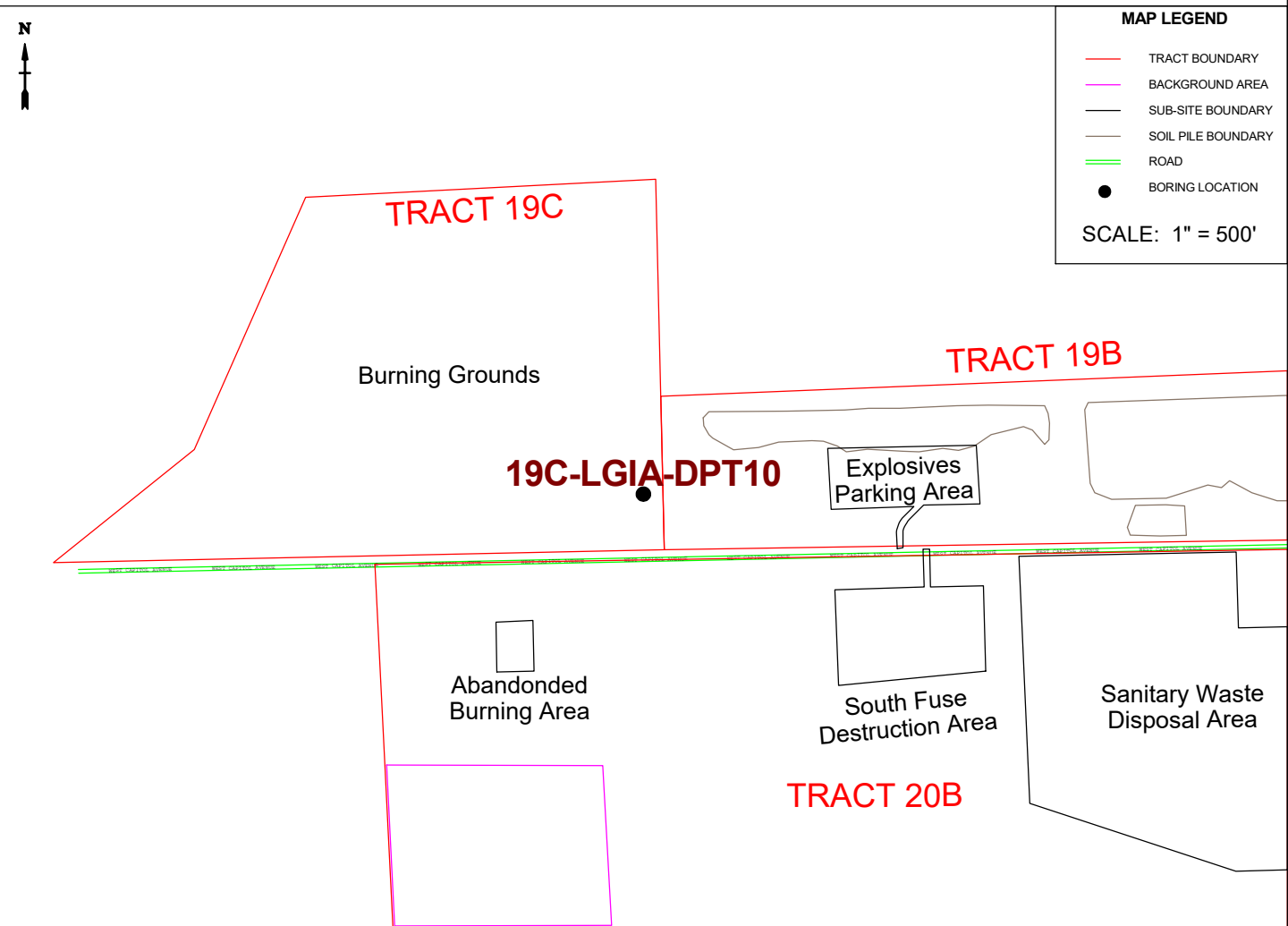
ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

| | | | | | |
|--|-------------------|---|---------------------------------------|--------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19C-LGIA-DPT10 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 5 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
M. Wold | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
409001.8 North 2049086.0 East | | | |
| | | 9. SURFACE ELEVATION
-- | | | |
| | | 10. DATE STARTED
5/1/2018 | | 11. DATE COMPLETED
5/1/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
14.25 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
N/A | | | |
| 14. TOTAL DEPTH OF HOLE
35.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
5.5 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
-- | OTHER (SPECIFY)
Lithology Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-DPT10

| PROJECT | | DISTRICT | | FIELD SCREENING RESULTS | | GEOTECH SAMPLE OR CORE BOX NO. | | ANALYTICAL SAMPLE NO. | | BLOW COUNT | | REMARKS | |
|--------------|--------------|---|--|--|--|-----------------------------------|--|-----------------------|--|------------|--|---------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | (d) | | (e) | | (f) | | (g) | | (h) | |
| | 0 | Topsoil | | | | | | | | | | | |
| | 1 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | | | | | | | | | | | |
| | 2 | | | | | | | | | | | | |
| | 3 | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | |
| | 9 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | | SS 1
8.5-10.5 ft.
100% Rec. | | | | 1 | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-DPT10

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-DPT10

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 5 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) (continued) | | | | 2 | |
| | 10 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained mottles. (5GY 4/1) | | | | 2 | |
| | 11 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
10.5-12.5 ft.
100% Rec. | | 4 | |
| | 12 | | | | | 4 | |
| | 13 | | | | | 4 | |
| | 14 | | | | | 4 | |
| | 15 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
12.5-14.5 ft.
100% Rec. | | 3 | |
| | 16 | | | | | 3 | |
| | 17 | | | | | 4 | |
| | 18 | | | | | 5 | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-DPT10

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-DPT10

| PROJECT | CHAAP, Grand Island, Nebraska | DISTRICT | US Army Corps of Engineers - Omaha District | | | | SHEET 4 OF 5 SHEETS |
|--------------|-------------------------------|---|---|--|---------------------------------|-------------------|---------------------|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | 18 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
18.5-20.5 ft.
100% Rec. | | 5 | |
| | 19 | | | | | 7 | |
| | | | | | | 8 | |
| | 20 | | | | | 9 | |
| | 21 | | | | | | |
| | 22 | | | | | | |
| | 23 | | | | | | |
| | 24 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
23.5-25.5 ft.
100% Rec. | | 4 | |
| | | | | | | 8 | |
| | | | | | | 9 | |
| | 25 | | | | | 9 | |
| | 26 | | | | | | |
| | 27 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-DPT10

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-DPT10

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 5 OF 5 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| | 27 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | |
| | 28 | | | | | | |
| | 29 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
28.5-30.5 ft.
100% Rec. | | 7 | |
| | 30 | | | | | 8 | |
| | 31 | | | | | 8 | |
| | 32 | | | | | 10 | |
| | 33 | | | | | | |
| | 34 | (CL) LEAN CLAY (90%): Low to medium
plasticity, medium toughness, medium dry
strength, no dilatancy, slightly moist, fine sand
(10%). (5GY 5/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 7
33.5-35.5 ft.
100% Rec. | | 8 | |
| | 35 | | | | | 5 | |
| | 36 | | | | | 5 | |
| | | Bottom of Borehole @ 35.5 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 14.25-34 ft | | | | 10 | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-DPT10

| HTRW DRILLING LOG | | | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19C-LGIA-DPT12 | |
|--|--|-------------------|-----------------------|---|-----------------------|---------------------------------------|----------------------------------|
| 1. COMPANY NAME
ATI / HGL | | | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 6 |
| 3. PROJECT
CHAAP | | | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
M. Wold | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | | | 8. HOLE LOCATION
408882.9 North 2047840.1 East | | | |
| | | | | 9. SURFACE ELEVATION
-- | | | |
| | | | | 10. DATE STARTED
5/1/2018 | | 11. DATE COMPLETED
5/1/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
14.25 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
N/A | | | |
| 14. TOTAL DEPTH OF HOLE
37.5 Feet Below the Ground Surface | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
5 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | | DISTURBED
N/A | | UNDISTURBED
N/A | | 19. TOTAL NUMBER OF CORE BOXES
--- | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | 21. TOTAL CORE RECOVERY
N/A % |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | | BACKFILLED
N/A | MONITORING WELL
-- | OTHER (SPECIFY)
Lithology Borehole | | 23. SIGNATURE OF INSPECTOR
 | |
| <div style="font-weight: bold; margin-bottom: 10px;">LOCATION SKETCH/COMMENTS</div> <div style="display: flex; align-items: flex-start;"> <div style="flex: 1;"> </div> <div style="flex: 0.2; border: 1px solid black; padding: 5px; font-size: 8pt; margin-left: 10px;"> MAP LEGEND
 <div style="display: flex; align-items: center; margin-bottom: 2px;"> TRACT BOUNDARY</div> <div style="display: flex; align-items: center; margin-bottom: 2px;"> BACKGROUND AREA</div> <div style="display: flex; align-items: center; margin-bottom: 2px;"> SUB-SITE BOUNDARY</div> <div style="display: flex; align-items: center; margin-bottom: 2px;"> SOIL PILE BOUNDARY</div> <div style="display: flex; align-items: center; margin-bottom: 2px;"> ROAD</div> <div style="display: flex; align-items: center; margin-bottom: 2px;">● BORING LOCATION</div> </div> </div> | | | | | | | |
| PROJECT CHAAP Grand Island, Nebraska | | | | | | HOLE NO 19C-LGIA-DPT12 | |

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-DPT12

| PROJECT | | DISTRICT | | FIELD SCREENING RESULTS | | GEOTECH SAMPLE OR CORE BOX NO. | | ANALYTICAL SAMPLE NO. | | BLOW COUNT | | REMARKS | |
|--------------|--------------|---|--|--|--|-----------------------------------|--|-----------------------|--|--------------|--|----------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | RESULTS
(d) | | OR CORE BOX NO.
(e) | | SAMPLE NO.
(f) | | COUNT
(g) | | REMARKS
(h) | |
| | 0 | Topsoil | | | | | | | | | | | |
| | 1 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | | | | | | | | | | | |
| | 2 | | | | | | | | | | | | |
| | 3 | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | |
| | 9 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | | SS 1
8.5-10.5 ft.
100% Rec. | | | | 2 | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-DPT12

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-DPT12

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| | 9 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained mottles. (5GY 4/1) | | | | 3 | |
| | | | | | | 4 | |
| | 10 | | | | | 3 | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
10.5-12.5 ft.
100% Rec. | | 2 | |
| | 11 | | | | | 2 | |
| | | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, brown and black mottles. (10Y 3/1) | | | | 2 | |
| | 12 | | | | | 3 | |
| | | | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
12.5-14.5 ft.
100% Rec. | | 3 | |
| | 13 | | | | | 4 | |
| | | | | | | 8 | |
| | 14 | | | | | 12 | |
| | | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | | |
| | 15 | | | | | | |
| | | | | | | | |
| | 16 | | | | | | |
| | | | | | | | |
| | 17 | | | | | | |
| | | | | | | | |
| | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-DPT12

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-DPT12

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 4 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| | 18 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
18.5-20.5 ft.
100% Rec. | | 4 | |
| | 19 | | | | | 5 | |
| | | | | | | 5 | |
| | 20 | | | | | 6 | |
| | 21 | | | | | | |
| | 22 | | | | | | |
| | 23 | | | | | | |
| | 24 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
23.5-25.5 ft.
100% Rec. | | 3 | |
| | | | | | | 5 | |
| | 25 | | | | | 7 | |
| | | | | | | 7 | |
| | 26 | | | | | | |
| | 27 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-DPT12

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-DPT12

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 5 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| | 27 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | |
| | 28 | | | | | | |
| | 29 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
28.5-30.5 ft.
100% Rec. | | 3 | |
| | | | | | | 4 | |
| | | (SW) MEDIUM GRADED CLEAN SAND
(70%): Poorly sorted, very coarse grained,
sub-angular, loose, wet, 25% well rounded
coarse gravel, 5% fines. (10Y 4/1) | | | | 4 | |
| | 30 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1) | | | | 8 | |
| | 31 | | | | | | |
| | 32 | | | | | | |
| | 33 | | | | | | |
| | 34 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 7
33.5-35.5 ft.
100% Rec. | | 12 | |
| | | | | | | 9 | |
| | | | | | | 6 | |
| | 35 | | | | | 6 | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 8
35.5-37.5 ft.
100% Rec. | | 10 | |
| | 36 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-DPT12

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-DPT12

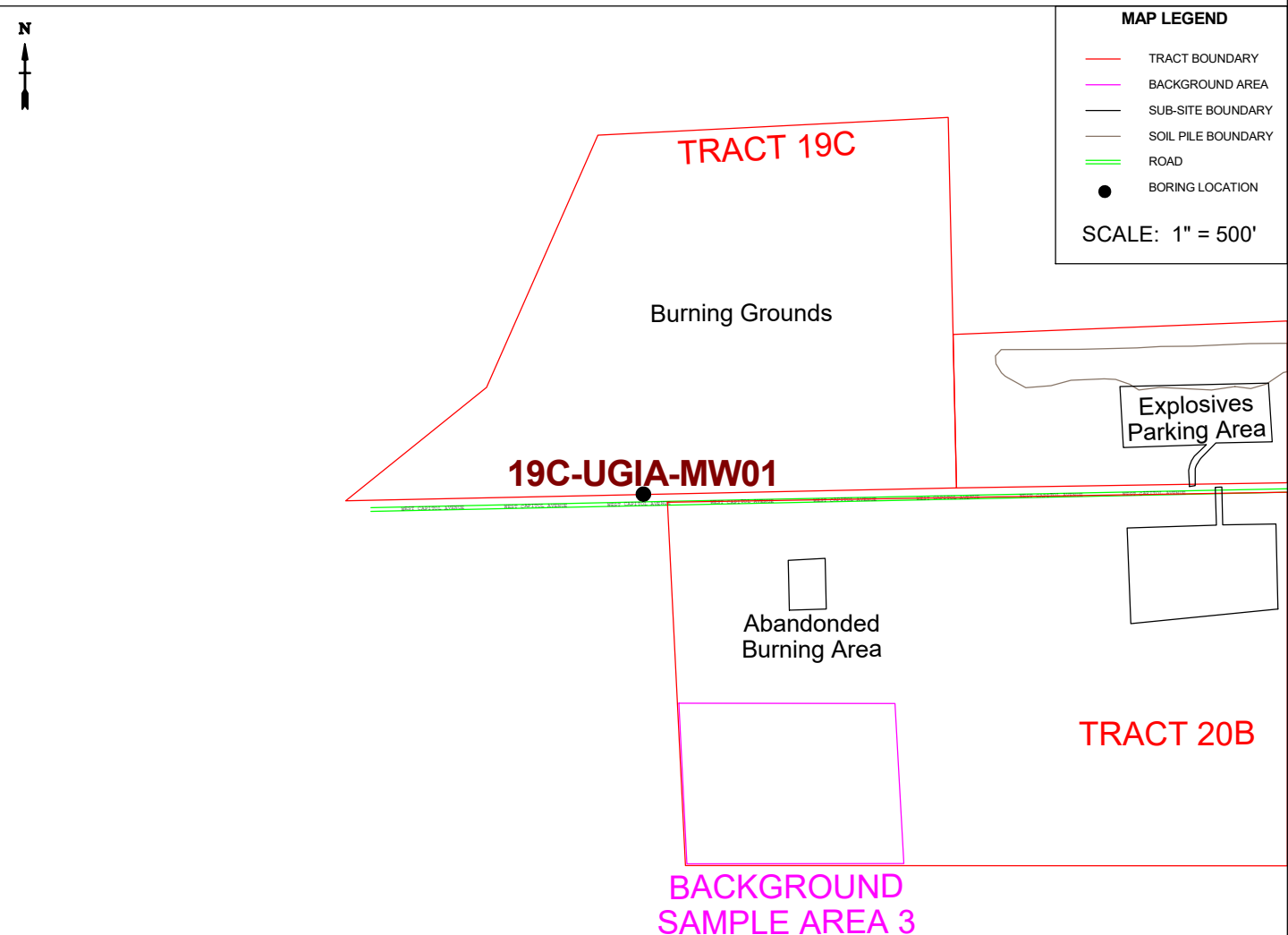
| PROJECT | | Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 6 OF 6 SHEETS | |
|--------------|--------------|---|--|-----------------------------------|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| | 36 | | | | | | 5 | | |
| | | (CL) LEAN CLAY (90%): Low to medium plasticity, medium toughness, medium dry strength, no dilatancy, slightly moist, fine sand (10%). (5GY 5/1) | | | | | 5 | | |
| | 37 | | | | | | 6 | | |
| | | | | | | | | | |
| | | Bottom of Borehole @ 37.5 ft
100 Gallons of Water Lost During Drilling
Heaving Sands14.25-37.5 ft | | | | | | | |
| | 38 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | 39 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | 40 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | 41 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | 42 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | 43 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | 44 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | 45 | | | | | | | | |

**Tract 19C Boring Logs
Monitoring Wells**

| | | | | | |
|--|-------------------|---|---------------------------------------|----------------------------------|------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19C-UGIA-MW01 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
408821.5 North 2048235.0 East | | | |
| | | 9. SURFACE ELEVATION
1903.8' MSL | | | |
| | | 10. DATE STARTED
6/14/2018 | | 11. DATE COMPLETED
6/14/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
13 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
10.63 ft on 6/15/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
21.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
9.76 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-UGIA-MW01

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1903.8 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| | | (CL) LEAN CLAY (88%): Low to medium plasticity, slightly moist, moderately soft, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | | | | | |
| 1902.8 | 1 | | | | | | |
| 1901.8 | 2 | | | | | | |
| 1900.8 | 3 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3-5 ft.
100% Rec. | | 3 | |
| 1899.8 | 4 | | | | | 4 | |
| | | | | | | 4 | |
| 1898.8 | 5 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, soft, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained mottles. (2.5Y 4/4) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
5-7 ft.
100% Rec. | | 3 | |
| 1897.8 | 6 | | | | | 4 | |
| | | | | | | 3 | |
| 1896.8 | 7 | (CL) LEAN CLAY (88%): Low to medium plasticity, slightly moist, moderately soft, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
7-9 ft.
100% Rec. | | 2 | |
| 1895.8 | 8 | | | | | 3 | |
| | | | | | | 3 | |
| 1894.8 | 9 | | | | | 3 | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-UGIA-MW01

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-UGIA-MW01

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1894.8 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, slightly moist, moderately soft, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (5Y 3/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
9-11 ft.
100% Rec. | | 3 | |
| | | | | | | 2 | |
| 1893.8 | 10 | | | | | 3 | |
| | | | | | | 3 | |
| 1892.8 | 11 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
11-13 ft.
100% Rec. | | 3 | |
| | | | | | | 4 | |
| 1891.8 | 12 | | | | | 5 | |
| | | | | | | 14 | |
| 1890.8 | 13 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | | |
| | | | | | | | |
| 1889.8 | 14 | | | | | | |
| | | | | | | | |
| 1888.8 | 15 | | | | | | |
| | | | | | | | |
| 1887.8 | 16 | | | | | | |
| | | | | | | | |
| 1886.8 | 17 | | | | | | |
| | | | | | | | |
| 1885.8 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-UGIA-MW01

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-UGIA-MW01

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 4 OF 4 SHEETS | |
|--------------|--------------|---|--|--|--|---|---------------------------------|---------------------|----------------|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1885.8 | 18 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
18-20 ft.
100% Rec. | | | 6 | |
| | 6 | | | | | | | | |
| 1884.8 | 19 | | | | | | | 7 | |
| | | | | | | | | 8 | |
| 1883.8 | 20 | | | | | | | | |
| | | | | | | | | | |
| 1882.8 | 21 | | | | | | | | |
| | | | | | | | | | |
| 1881.8 | 22 | Bottom of Borehole @ 21.5 ft
10 Gallons of Water Lost During Drilling
Heaving Sands13-21.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | |
| | | | | | | | | | |
| 1880.8 | 23 | | | | | | | | |
| | | | | | | | | | |
| 1879.8 | 24 | | | | | | | | |
| | | | | | | | | | |
| 1878.8 | 25 | | | | | | | | |
| | | | | | | | | | |
| 1877.8 | 26 | | | | | | | | |
| | | | | | | | | | |
| 1876.8 | 27 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-UGIA-MW01

| HTRW DRILLING LOG | | | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19C-LGIA-MW02 | |
|--|--|-----------------------|--|---|--|---------------------------------------|-----------------|
| 1. COMPANY NAME
ATI / HGL | | | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 6 |
| 3. PROJECT
CHAAP | | | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | | | 8. HOLE LOCATION
408821.5 North 2048240.2 East | | | |
| | | | | 9. SURFACE ELEVATION
1904.0' MSL | | | |
| | | | | 10. DATE STARTED
6/14/2018 | | 11. DATE COMPLETED
6/14/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
13 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
10.51 ft on 6/15/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
38.0 Feet Below the Ground Surface | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
10.15 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | | DISTURBED
N/A | | UNDISTURBED
N/A | | 19. TOTAL NUMBER OF CORE BOXES
--- | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | | VOC
NA | | METALS
NA | | OTHER (SPECIFY)
NA | |
| | | OTHER (SPECIFY)
NA | | OTHER (SPECIFY)
NA | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | | BACKFILLED
N/A | | MONITORING WELL
YES | | 23. SIGNATURE OF INSPECTOR
 | |
| <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 20%;"> <p>LOCATION SKETCH/COMMENTS</p> </div> <div style="width: 80%;"> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center; margin: 0;">MAP LEGEND</p> <ul style="list-style-type: none"> — TRACT BOUNDARY — BACKGROUND AREA — SUB-SITE BOUNDARY — SOIL PILE BOUNDARY — ROAD ● BORING LOCATION <p style="margin-top: 5px;">SCALE: 1" = 500'</p> </div> </div> </div> | | | | | | | |
| PROJECT CHAAP Grand Island, Nebraska | | | | | | HOLE NO 19C-LGIA-MW02 | |

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-MW02

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1904.0 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| | | (CL) LEAN CLAY (88%): Low to medium plasticity, slightly moist, moderately soft, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | | | | | |
| 1903.0 | 1 | | | | | | |
| 1902.0 | 2 | | | | | | |
| 1901.0 | 3 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3-5 ft.
100% Rec. | | 3 | |
| 1900.0 | 4 | | | | | 4 | |
| | | | | | | 4 | |
| 1899.0 | 5 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, soft, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained mottles. (2.5Y 4/4) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
5-7 ft.
100% Rec. | | 3 | |
| 1898.0 | 6 | | | | | 4 | |
| | | | | | | 3 | |
| 1897.0 | 7 | (CL) LEAN CLAY (88%): Low to medium plasticity, slightly moist, moderately soft, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
7-9 ft.
100% Rec. | | 2 | |
| 1896.0 | 8 | | | | | 3 | |
| | | | | | | 3 | |
| 1895.0 | 9 | | | | | 3 | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-MW02

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-MW02

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1895.0 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, slightly moist, moderately soft, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (5Y 3/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
9-11 ft.
100% Rec. | | 3 | |
| | | | | | | 2 | |
| 1894.0 | 10 | | | | | 3 | |
| | | | | | | 3 | |
| 1893.0 | 11 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
11-13 ft.
100% Rec. | | 3 | |
| | | | | | | 4 | |
| 1892.0 | 12 | | | | | 5 | |
| | | | | | | 14 | |
| 1891.0 | 13 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | | |
| | | | | | | | |
| 1890.0 | 14 | | | | | | |
| | | | | | | | |
| 1889.0 | 15 | | | | | | |
| | | | | | | | |
| 1888.0 | 16 | | | | | | |
| | | | | | | | |
| 1887.0 | 17 | | | | | | |
| | | | | | | | |
| 1886.0 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-MW02

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-MW02

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 4 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1886.0 | 18 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
18-20 ft.
100% Rec. | | 6 | |
| | | | | | | 6 | |
| | | | | | | 7 | |
| 1885.0 | 19 | | | | | 8 | |
| | | | | | | | |
| 1884.0 | 20 | | | | | | |
| | | | | | | | |
| 1883.0 | 21 | | | | | | |
| | | | | | | | |
| 1882.0 | 22 | | | | | | |
| | | | | | | | |
| 1881.0 | 23 | | | | | | |
| | | | | | | | |
| 1880.0 | 24 | | | | | | |
| | | | | | | | |
| 1879.0 | 25 | | | | | | |
| | | | | | | | |
| 1878.0 | 26 | | | | | | |
| | | | | | | | |
| 1877.0 | 27 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

19C-LGIA-MW02

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-MW02

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 5 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1877.0 | 27 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | |
| 1876.0 | 28 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 8
28-30 ft.
100% Rec. | | 9 | |
| 1875.0 | 29 | | | | | 8 | |
| 1874.0 | 30 | | | | | 8 | |
| 1873.0 | 31 | | | | | 10 | |
| 1872.0 | 32 | | | | | | |
| 1871.0 | 33 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 9
33-35 ft.
100% Rec. | | 8 | |
| 1870.0 | 34 | | | | | 8 | |
| 1869.0 | 35 | | | | | 12 | |
| 1868.0 | 36 | | | | | 12 | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

19C-LGIA-MW02

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-MW02

| PROJECT | | DISTRICT | | ANALYTICAL | | | SHEET | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|----------------|--|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | 6 | | 6 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | | |
| 1868.0 | 36 | (CL) LEAN CLAY (90%): Low to medium plasticity, medium toughness, medium dry strength, no dilatancy, slightly moist, fine sand (10%). (5GY 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 10
36-38 ft.
100% Rec. | | 5 | | | | | | |
| | 7 | | | | | | | | | | | |
| 1867.0 | 37 | | | | | 9 | | | | | | |
| | | | | | | 12 | | | | | | |
| 1866.0 | 38 | | | | | | | | | | | |
| | | Bottom of Borehole @ 38 ft
100 Gallons of Water Lost During Drilling
Heaving Sands13-36 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | | | | | |
| 1865.0 | 39 | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 1864.0 | 40 | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 1863.0 | 41 | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 1862.0 | 42 | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 1861.0 | 43 | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 1860.0 | 44 | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 1859.0 | 45 | | | | | | | | | | | |

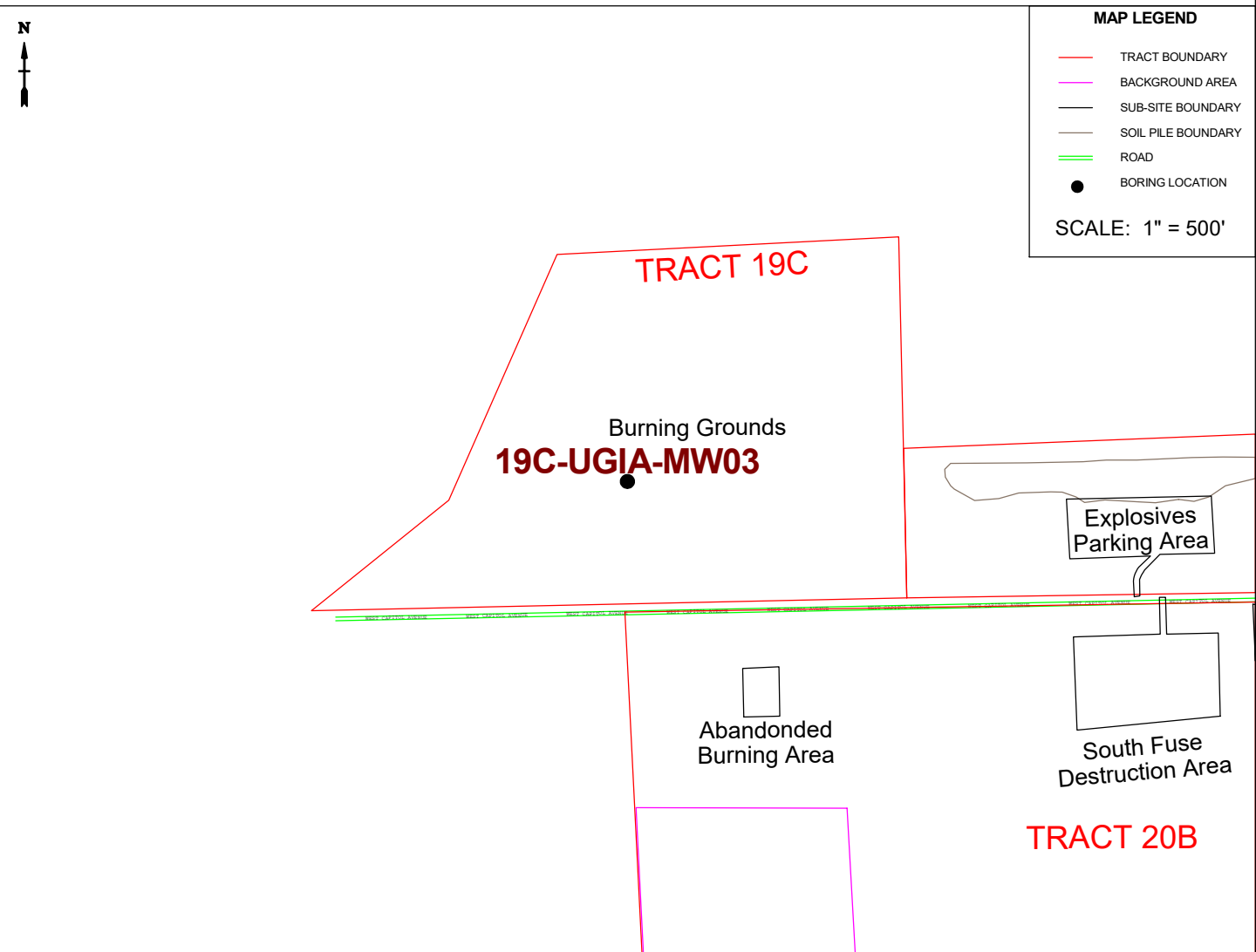
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-MW02

| | | | | | |
|--|-------------------|--|---------------------------------------|----------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19C-UGIA-MW03 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
409187.8 North 2048312.0 East | | | |
| | | 9. SURFACE ELEVATION
1899.0' MSL | | | |
| | | 10. DATE STARTED
6/12/2018 | | 11. DATE COMPLETED
6/12/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
11.4 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
5.43 ft on 6/13/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
21.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
3 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-UGIA-MW03

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1899.0 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| | | (CL) LEAN CLAY (88%): Low to medium plasticity, slightly moist, moderately soft, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | | | | | |
| 1898.0 | 1 | | | | | | |
| | | | | | | | |
| 1897.0 | 2 | | | | | | |
| | | | | | | | |
| 1896.0 | 3 | | | | | | |
| | | | | | | | |
| 1895.0 | 4 | | | | | | |
| | | | | | | | |
| 1894.0 | 5 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
4.5-6.5 ft.
100% Rec. | | 2 | |
| | | | | | | 2 | |
| | | | | | | 2 | |
| 1893.0 | 6 | | | | | 3 | |
| | | | | | | | |
| 1892.0 | 7 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
6.5-8.5 ft.
100% Rec. | | 1 | |
| | | | | | | 2 | |
| | | | | | | 2 | |
| 1891.0 | 8 | | | | | | |
| | | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, soft, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained mottles. (10Y 3/1) | | | | 2 | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
8.5-10.5 ft.
100% Rec. | | 1 | |
| 1890.0 | 9 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-UGIA-MW03

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-UGIA-MW03

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1890.0 | 9 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, soft, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained mottles. (10Y 3/1) <i>(continued)</i> | | | | 1 | |
| | | | | | | 3 | |
| 1889.0 | 10 | | | | | 5 | |
| | | | | | | 5 | |
| 1888.0 | 11 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
10.5-12.5 ft.
100% Rec. | | 8 | |
| | | | | | | 13 | |
| 1887.0 | 12 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | 18 | |
| | | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, soft, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained mottles. (10Y 3/1) | | | | | |
| 1886.0 | 13 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | | |
| 1885.0 | 14 | | | | | | |
| 1884.0 | 15 | | | | | | |
| 1883.0 | 16 | | | | | | |
| 1882.0 | 17 | | | | | | |
| 1881.0 | 18 | | | | | | |

PROJECT CHAAP, Grand Island, Nebraska

HOLE NO 19C-UGIA-MW03

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


19C-UGIA-MW03

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 4 | | 4 | | 4 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1881.0 | 18 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | | | | | |
| | | | | | | 9 | | | | | |
| 1880.0 | 19 | | | | | 10 | | | | | |
| | | | | | | 11 | | | | | |
| 1879.0 | 20 | | | | | 13 | | | | | |
| | | | | | | | | | | | |
| 1878.0 | 21 | | | | | | | | | | |
| | | Bottom of Borehole @ 21 ft
10 Gallons of Water Lost During Drilling
Heaving Sands12.4-21 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | | | |
| 1877.0 | 22 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1876.0 | 23 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1875.0 | 24 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1874.0 | 25 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1873.0 | 26 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1872.0 | 27 | | | | | | | | | | |

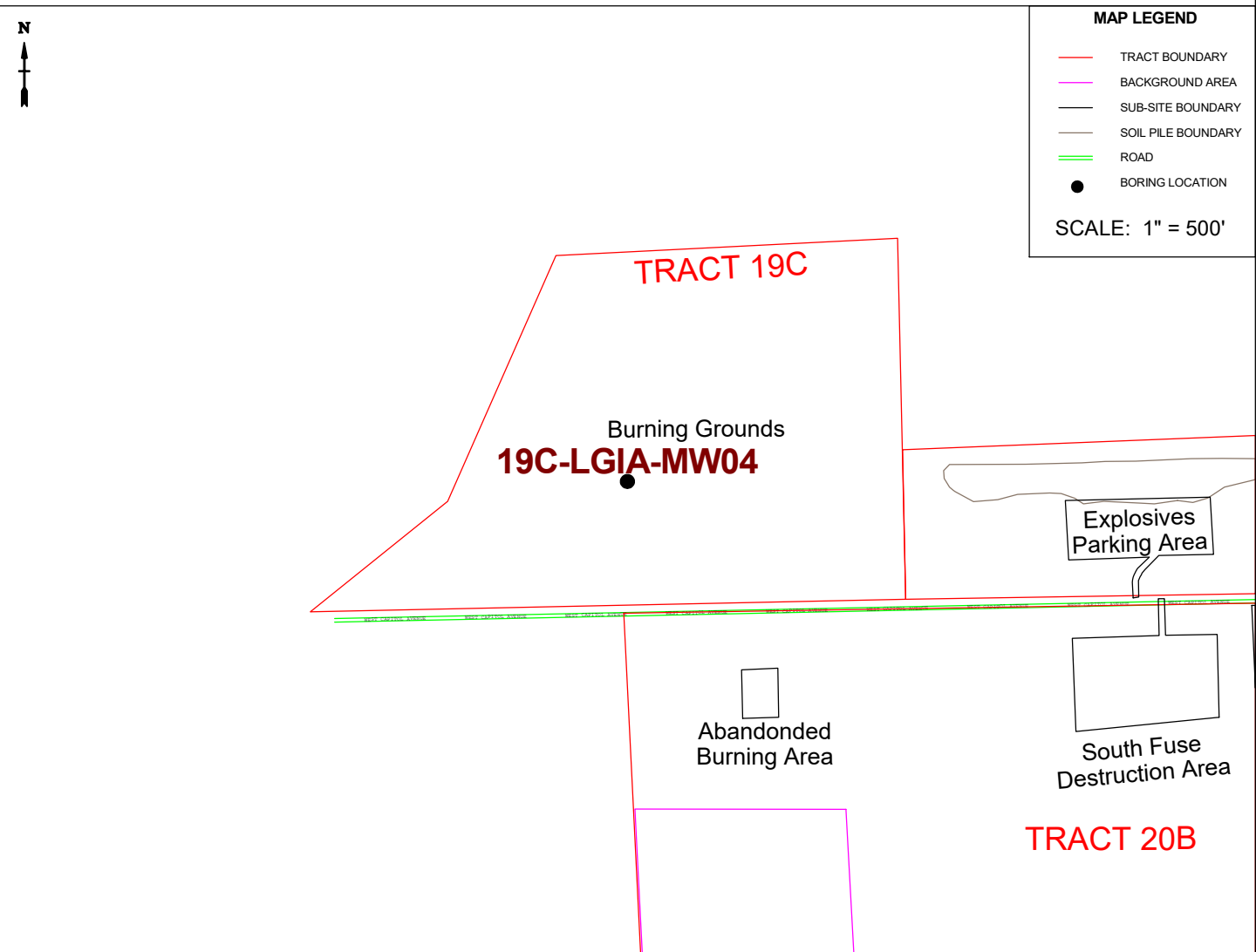
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-UGIA-MW03

| | | | | | |
|--|-------------------|--|---------------------------------------|--|----------------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19C-LGIA-MW04 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 6 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
409191.6 North 2048315.4 East | | | |
| | | 9. SURFACE ELEVATION
1899.1' MSL | | | |
| | | 10. DATE STARTED
6/12/2018 | 11. DATE COMPLETED
6/12/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
11.4 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
5.34 ft on 6/13/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
36.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
3 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | | 21. TOTAL CORE RECOVERY
N/A % |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-MW04

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1899.1 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| | | (CL) LEAN CLAY (88%): Low to medium plasticity, slightly moist, moderately soft, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | | | | | |
| 1898.1 | 1 | | | | | | |
| | | | | | | | |
| 1897.1 | 2 | | | | | | |
| | | | | | | | |
| 1896.1 | 3 | | | | | | |
| | | | | | | | |
| 1895.1 | 4 | | | | | | |
| | | | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
4.5-6.5 ft.
100% Rec. | | 2 | |
| 1894.1 | 5 | | | | | 2 | |
| | | | | | | 2 | |
| 1893.1 | 6 | | | | | 3 | |
| | | | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
6.5-8.5 ft.
100% Rec. | | 1 | |
| 1892.1 | 7 | | | | | 2 | |
| | | | | | | 2 | |
| 1891.1 | 8 | | | | | 2 | |
| | | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, soft, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained mottles. (10Y 3/1) | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
8.5-10.5 ft.
100% Rec. | | 1 | |
| 1890.1 | 9 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-MW04

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-MW04

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1890.1 | 9 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, soft, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained mottles. (10Y 3/1) <i>(continued)</i> | | | | 1 | |
| | | | | | | 3 | |
| 1889.1 | 10 | | | | | 5 | |
| | | | | | | 5 | |
| 1888.1 | 11 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
10.5-12.5 ft.
100% Rec. | | 8 | |
| | | | | | | 13 | |
| 1887.1 | 12 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | 18 | |
| | | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, soft, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained mottles. (10Y 3/1) | | | | | |
| 1886.1 | 13 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | | |
| 1885.1 | 14 | | | | | | |
| 1884.1 | 15 | | | | | | |
| 1883.1 | 16 | | | | | | |
| 1882.1 | 17 | | | | | | |
| 1881.1 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-MW04

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-MW04

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 4 OF 6 SHEETS | |
|--------------|--------------|---|--|--|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1881.1 | 18 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | | | | | | |
| | | | | | | | 9 | | |
| 1880.1 | 19 | | | | | | 10 | | |
| | | | | | | | 11 | | |
| 1879.1 | 20 | | | | | | 13 | | |
| 1878.1 | 21 | | | | | | | | |
| 1877.1 | 22 | | | | | | | | |
| 1876.1 | 23 | | | | | | | | |
| 1875.1 | 24 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
23.5-25.5 ft.
100% Rec. | | 10 | | |
| | | | | | | | 10 | | |
| | | | | | | | 8 | | |
| 1874.1 | 25 | | | | | | 12 | | |
| 1873.1 | 26 | | | | | | | | |
| 1872.1 | 27 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-MW04

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-MW04

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 5 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1872.1 | 27 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | |
| 1871.1 | 28 | | | | | | |
| 1870.1 | 29 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 7
28.5-30.5 ft.
100% Rec. | | 8 | |
| 1869.1 | 30 | | | | | 11 | |
| | | | | | | 11 | |
| 1868.1 | 31 | | | | | 15 | |
| 1867.1 | 32 | | | | | | |
| 1866.1 | 33 | | | | | | |
| 1865.1 | 34 | (CL) LEAN CLAY (90%): Low to medium
plasticity, medium toughness, medium dry
strength, no dilatancy, slightly moist, fine sand
(10%). (5GY 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 8
34-36 ft.
100% Rec. | | 10 | |
| | | | | | | 12 | |
| 1864.1 | 35 | | | | | 14 | |
| | | | | | | 15 | |
| 1863.1 | 36 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-MW04

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


19C-LGIA-MW04

| PROJECT | | DISTRICT | | SHEET | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 6 | | | 6 | | 6 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| 1863.1 | 36 | Bottom of Borehole @ 36 ft
100 Gallons of Water Lost During Drilling
Heaving Sands12.4-34 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | | | |
| 1862.1 | 37 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1861.1 | 38 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1860.1 | 39 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1859.1 | 40 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1858.1 | 41 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1857.1 | 42 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1856.1 | 43 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1855.1 | 44 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1854.1 | 45 | | | | | | | | | |

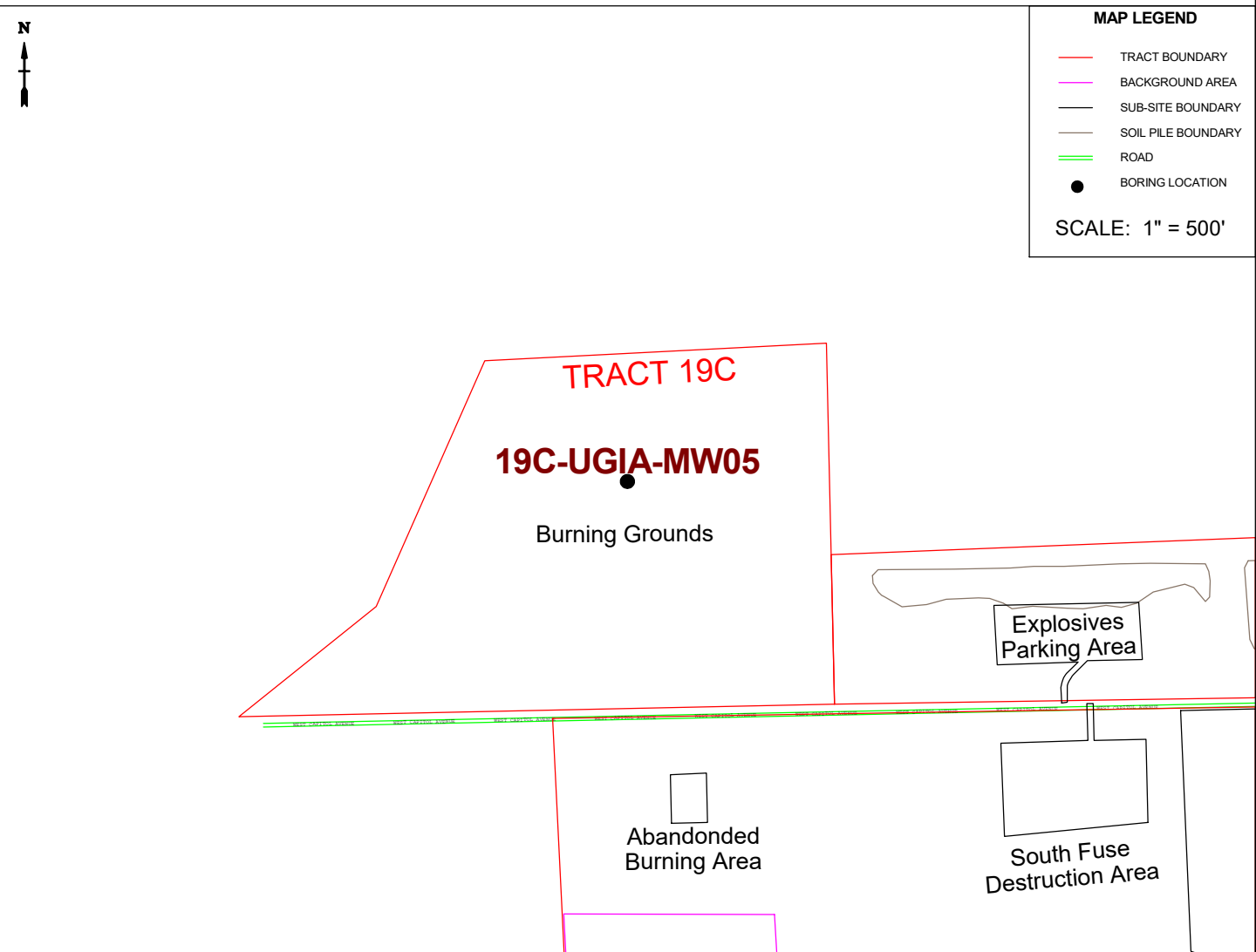
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-MW04

| | | | | | |
|--|-------------------|--|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19C-UGIA-MW05 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
409505.2 North 2048528.3 East | | | |
| | | 9. SURFACE ELEVATION
1898.3' MSL | | | |
| | | 10. DATE STARTED
6/13/2018 | | 11. DATE COMPLETED
6/13/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
8.75 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
5.34 ft on 6/14/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
17.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
5.08 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-UGIA-MW05

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1898.3 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| | | (CL) LEAN CLAY (88%): Low to medium plasticity, slightly moist, moderately soft, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | | | | | |
| 1897.3 | 1 | | | | | | |
| | | | | | | | |
| 1896.3 | 2 | | | | | | |
| | | | | | | | |
| 1895.3 | 3 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3-5 ft.
100% Rec. | | W | |
| | | | | | | 2 | |
| 1894.3 | 4 | | | | | 3 | |
| | | | | | | 3 | |
| 1893.3 | 5 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
5-7 ft.
100% Rec. | | 3 | |
| | | | | | | 4 | |
| 1892.3 | 6 | | | | | 4 | |
| | | | | | | 4 | |
| 1891.3 | 7 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
7-9 ft.
100% Rec. | | 4 | |
| | | | | | | 4 | |
| 1890.3 | 8 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, soft, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained mottles. (10Y 3/1) | | | | 4 | |
| | | | | | | 4 | |
| 1889.3 | 9 | *See Next Page | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-UGIA-MW05

HTRW DRILLING LOG

S. Cameron

19C-UGIA-MW05

SHEET 3 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|
| 1889.3 | 9 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | |
| 1888.3 | 10 | | | | | | |
| 1887.3 | 11 | | | | | | |
| 1886.3 | 12 | | | | | | |
| 1885.3 | 13 | | | | | | |
| 1884.3 | 14 | | | | | | |
| 1883.3 | 15 | | | | | | |
| 1882.3 | 16 | | | | | | |
| 1881.3 | 17 | | | | | | |
| | | | | | | | |
| | | Bottom of Borehole @ 17.5 ft
10 Gallons of Water Lost During Drilling
Heaving Sands8.75-17.5 ft | | | | | |

| | |
|---------|---------------|
| HOLE NO | 19C-UGIA-MW05 |
|---------|---------------|

HTRW DRILLING LOG

INSPECTOR


S. Cameron

HOLE NUMBER

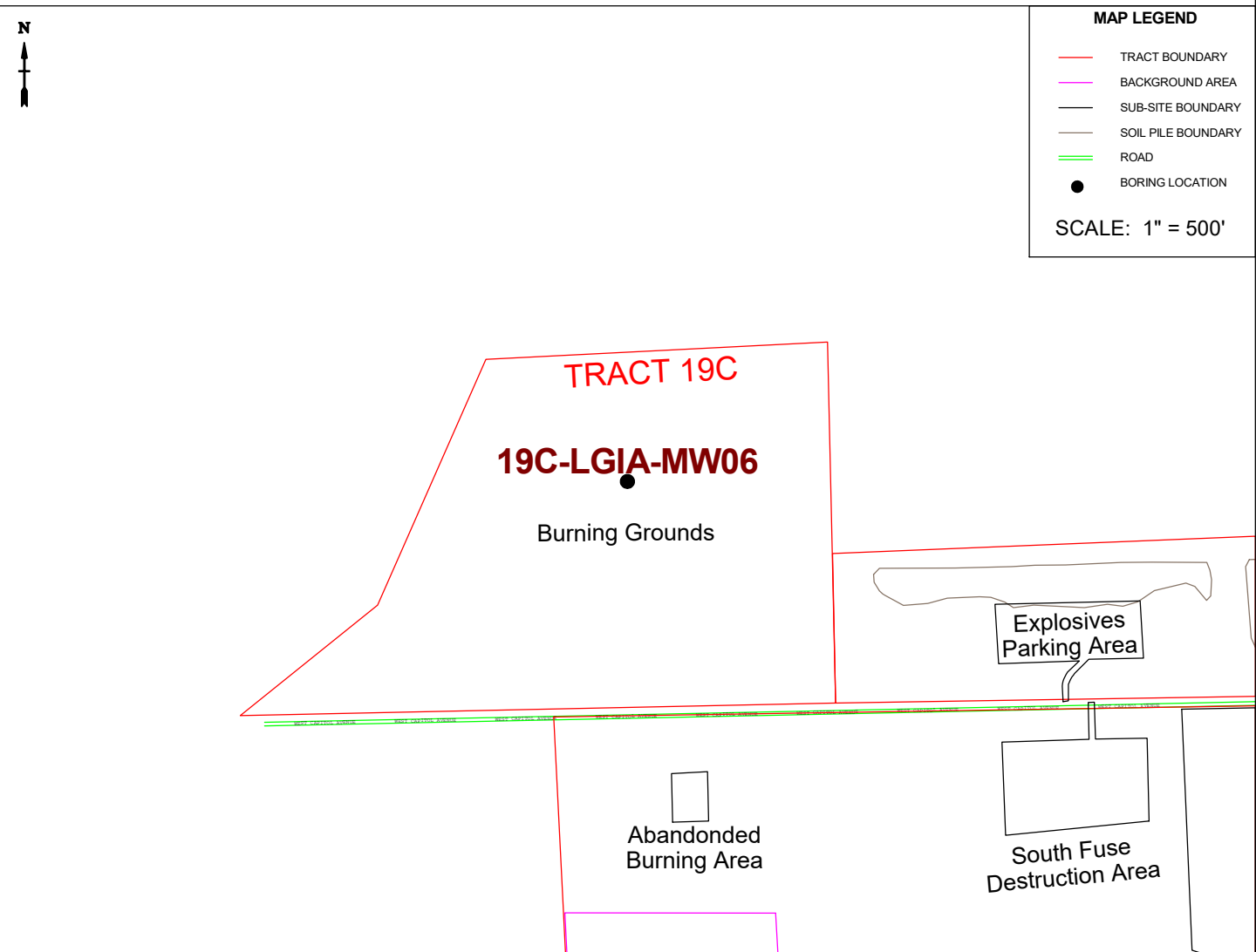
19C-UGIA-MW05

| PROJECT | | | CHAAP | | | Grand Island, Nebraska | | | DISTRICT | | | US Army Corps of Engineers - Omaha District | | | SHEET | | | 4 | | | OF | | | 4 | | | SHEETS | | |
|--------------|--|--------------|-------|--|--|------------------------|--|--|-----------------------------------|--|--|---|---------------------------------|--|-------------------|--|----------------|---|--|--|----|--|--|---|--|--|--------|--|--|
| ELEV.
(a) | | DEPTH
(b) | | DESCRIPTION OF MATERIALS
(c) | | | | | FIELD SCREENING
RESULTS
(d) | | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | | ANALYTICAL
SAMPLE NO.
(f) | | BLOW COUNT
(g) | | REMARKS
(h) | | | | | | | | | | | | |
| 1880.3 | | 18 | | Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1879.3 | | 19 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1878.3 | | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1877.3 | | 21 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1876.3 | | 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1875.3 | | 23 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1874.3 | | 24 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1873.3 | | 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1872.3 | | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1871.3 | | 27 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | | | | |
|--|-------------------|--|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19C-LGIA-MW06 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 5 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
409501.5 North 2048524.8 East | | | |
| | | 9. SURFACE ELEVATION
1898.0' MSL | | | |
| | | 10. DATE STARTED
6/13/2018 | | 11. DATE COMPLETED
6/13/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
8.75 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
5.05 ft on 6/14/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
34.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
4.84 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-MW06

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 5 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1898.0 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| | | (CL) LEAN CLAY (88%): Low to medium plasticity, slightly moist, moderately soft, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | | | | | |
| 1897.0 | 1 | | | | | | |
| 1896.0 | 2 | | | | | | |
| 1895.0 | 3 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3-5 ft.
100% Rec. | | W | |
| 1894.0 | 4 | | | | | 2 | |
| | | | | | | 3 | |
| | | | | | | 3 | |
| 1893.0 | 5 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
5-7 ft.
100% Rec. | | 3 | |
| 1892.0 | 6 | | | | | 4 | |
| | | | | | | 4 | |
| | | | | | | 4 | |
| 1891.0 | 7 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
7-9 ft.
100% Rec. | | 4 | |
| | | | | | | 4 | |
| 1890.0 | 8 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, soft, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained mottles. (10Y 3/1) | | | | 4 | |
| | | | | | | 4 | |
| 1889.0 | 9 | *See Next Page | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-MW06

HTRW DRILLING LOG

S. Cameron

19C-LGIA-MW06

| |
|---------------------|
| SHEET 3 OF 5 SHEETS |
|---------------------|

| | | | |
|---------|------------------------------|---------|---------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 19C-LGIA-MW06 |
|---------|------------------------------|---------|---------------|

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-MW06

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | | SHEET 4 OF 5 SHEETS | |
|--------------|--------------|---|--|---|---------------------------------|-------------------|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1880.0 | 18 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
18-20 ft.
100% Rec. | | 5 | | | |
| | | | | | | 5 | | | |
| 1879.0 | 19 | | | | | 6 | | | |
| | | | | | | 6 | | | |
| 1878.0 | 20 | | | | | | | | |
| | | | | | | | | | |
| 1877.0 | 21 | | | | | | | | |
| | | | | | | | | | |
| 1876.0 | 22 | | | | | | | | |
| | | | | | | | | | |
| 1875.0 | 23 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
23-25 ft.
100% Rec. | | 8 | | | |
| | | 9 | | | | | | | |
| 1874.0 | 24 | 7 | | | | | | | |
| | | 7 | | | | | | | |
| 1873.0 | 25 | | | | | | | | |
| | | | | | | | | | |
| 1872.0 | 26 | | | | | | | | |
| | | | | | | | | | |
| 1871.0 | 27 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-MW06

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


19C-LGIA-MW06

| PROJECT | CHAAP, Grand Island, Nebraska | | DISTRICT | US Army Corps of Engineers - Omaha District | | | | SHEET 5 OF 5 SHEETS | |
|--------------|-------------------------------|--|--|---|---------------------------------|-------------------|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1871.0 | 27 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | | | | | | |
| 1870.0 | 28 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 7
28-30 ft.
100% Rec. | | 5 | | | |
| | | | | | | 6 | | | |
| 1869.0 | 29 | | | | | 6 | | | |
| | | | | | | 8 | | | |
| 1868.0 | 30 | | | | | | | | |
| | | | | | | | | | |
| 1867.0 | 31 | | | | | | | | |
| | | | | | | | | | |
| 1866.0 | 32 | (CL) LEAN CLAY (90%): Low to medium plasticity, medium toughness, medium dry strength, no dilatancy, slightly moist, fine sand (10%). (5GY 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 8
32-34 ft.
100% Rec. | | 8 | | | |
| | | | | | | 11 | | | |
| 1865.0 | 33 | | | | | 13 | | | |
| | | | | | | 13 | | | |
| 1864.0 | 34 | Bottom of Borehole @ 34 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 8.75-32 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | | |
| 1863.0 | 35 | | | | | | | | |
| 1862.0 | 36 | | | | | | | | |

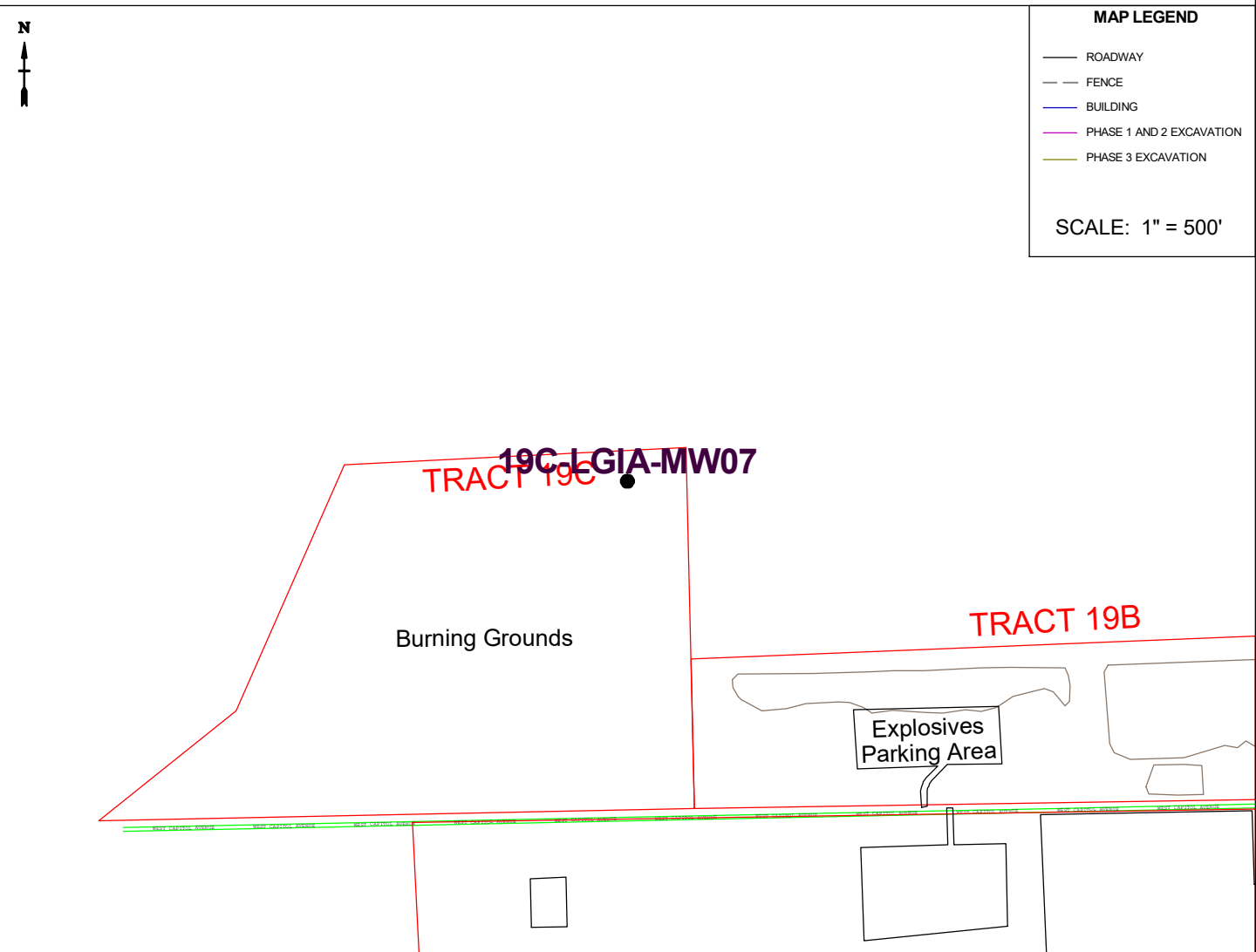
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-MW06

| | | | | | |
|--|-------------------|--|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
19C-LGIA-MW07 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 6 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Mobile HDX 61 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
409817.2 North 2048947.0 East | | | |
| | | 9. SURFACE ELEVATION
1904.5' MSL | | | |
| | | 10. DATE STARTED
7/18/2018 | | 11. DATE COMPLETED
7/18/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
8.43 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
8.02 ft on 7/19/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
38.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
7.32 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-MW07

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-MW07

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1904.5 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1903.5 | 1 | | | | | | |
| 1902.5 | 2 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | | | | | |
| 1901.5 | 3 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3-5 ft.
100% Rec. | | 2 | |
| 1900.5 | 4 | | | | | 3 | |
| | | | | | | 2 | |
| | | | | | | 3 | |
| 1899.5 | 5 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
5-7 ft.
100% Rec. | | 3 | |
| 1898.5 | 6 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained mottles. (5GY 4/1) | | | | 2 | |
| | | | | | | 2 | |
| | | | | | | 4 | |
| 1897.5 | 7 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
7-9 ft.
100% Rec. | | 2 | |
| 1896.5 | 8 | | | | | 2 | |
| | | | | | | 3 | |
| | | | | | | 3 | |
| 1895.5 | 9 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

19C-LGIA-MW07

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-MW07

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1895.5 | 9 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained mottles. (5GY 4/1) (continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
9-11 ft.
100% Rec. | | 4 | |
| 1894.5 | 10 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, brown and black mottles. (10Y 3/1) | | | | 4
5
6 | |
| 1893.5 | 11 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
11-13 ft.
100% Rec. | | 7 | |
| 1892.5 | 12 | | | | | 6
8
8 | |
| 1891.5 | 13 | | | | | | |
| 1890.5 | 14 | | | | | | |
| 1889.5 | 15 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | | |
| 1888.5 | 16 | | | | | | |
| 1887.5 | 17 | | | | | | |
| 1886.5 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-MW07

HTRW DRILLING LOG

S. Cameron

19C-LGIA-MW07

| | |
|----------|---|
| DISTRICT | US Army Corps of Engineers - Omaha District |
|----------|---|

SHEET 4 OF 6 SHEETS

| | | | |
|---------|------------------------------|---------|---------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 19C-LGIA-MW07 |
|---------|------------------------------|---------|---------------|

(Proponent: CECW-EG)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-MW07

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 5 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1877.5 | 27 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | |
| 1876.5 | 28 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 8
28-30 ft.
100% Rec. | | 5 | |
| 1875.5 | 29 | | | | | 7 | |
| | | | | | | 7 | |
| 1874.5 | 30 | (SW) MEDIUM GRADED CLEAN SAND
(70%): Poorly sorted, very coarse grained,
sub-angular, loose, wet, 25% well rounded
coarse gravel, 5% fines. (10Y 4/1) | | | | 6 | |
| | | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1) | | | | | |
| 1873.5 | 31 | | | | | | |
| 1872.5 | 32 | | | | | | |
| 1871.5 | 33 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 9
33-35 ft.
100% Rec. | | 4 | |
| | | | | | | 7 | |
| 1870.5 | 34 | | | | | 8 | |
| | | | | | | 7 | |
| 1869.5 | 35 | | | | | | |
| 1868.5 | 36 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-MW07

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

19C-LGIA-MW07

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 6 OF 6 SHEETS

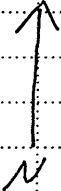
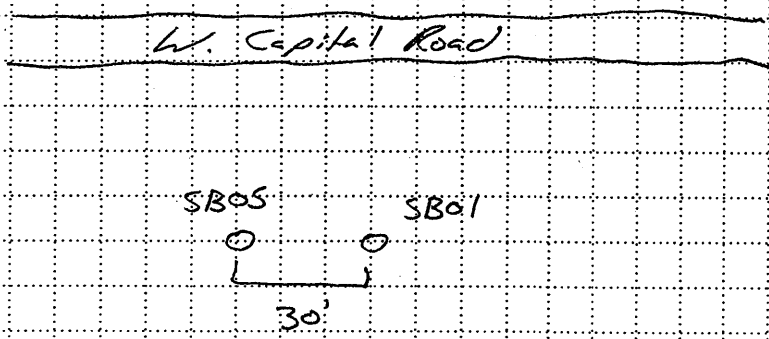
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1868.5 | 36 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | |
| 1867.5 | 37 | | | | | | |
| 1866.5 | 38 | (CL) LEAN CLAY (90%): Low to medium
plasticity, medium toughness, medium dry
strength, no dilatancy, slightly moist, fine sand
(10%). (5GY 5/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 10
38-40 ft.
100% Rec. | | 4 | |
| 1865.5 | 39 | Bottom of Borehole @ 38.5 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 11.2-37.5 ft
Monitoring Well Materials:
250 Lbs #1 Silica Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | 5 | |
| | | | | | | 5 | |
| | | | | | | 8 | |
| | | | | | | | |
| 1864.5 | 40 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1863.5 | 41 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1862.5 | 42 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1861.5 | 43 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1860.5 | 44 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1859.5 | 45 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 19C-LGIA-MW07

**Tract 20B Boring Logs
Soil Samples**

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| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>20B-SB01</i> | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSI Engineering</i> | | SHEET <i>1</i> OF <i>3</i> SHEETS | |
| 3. PROJECT
<i>CHAAP - Tract 20B</i> | | | | 4. LOCATION
<i>CHAAP, NE Tract 20B</i> | | | |
| 5. NAME OF DRILLER
<i>Matthew Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>Geoprobe 6620 DT</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>Geoprobe Dual Tube 2" x 4'</i> | | | | 8. HOLE LOCATION
<i>SB01</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>3.15.18</i> | | 11. DATE COMPLETED
<i>3.15.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>~12' bgs</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>12' bgs</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES
<i>NA</i> | | DISTURBED
<i>-</i> | | UNDISTURBED
<i>-</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>NA</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>Yes</i> | | VOC | | METALS
<i>X</i> | | OTHER (SPECIFY)
<i>Explosives</i> | |
| | | | | | | OTHER (SPECIFY)
<i>PAHs</i> | |
| 22. DISPOSITION OF HOLE
<i>Soil boring</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 21. TOTAL CORE
<i>NA</i> % | |
| | | | | 23. SIGNATURE OF INSPECTOR
<i>A. Hodgepohl</i> | | | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> <div style="text-align: right;"> <p>SCALE: <i>not to scale</i></p> </div> </div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>20B-SB01</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
20B-SB01 |
|--|--------------|---|---|--|---------------------------------|---|-------------------------|
| PROJECT
CHAAP Tract 20B | | | INSPECTOR
K. Wierenga / A. Hedgepeth | | | SHEET
2 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | REMARKS /
(h) Samples | |
| | | Topsoil | | | | SS Sample
20B-SS01 | |
| | 1 | Lean Clay (CL), 90% Fines,
10% F. Sand, V. Dark Brown
(10y-2 1/2), m. plastic, Soft
to Firm, dry, no odor | 0.0 | -- | -- | 100% | |
| | 2 | Lean Clay (CL) 90% Fines
10% F. Sand, V. Dark brown
(10y-2 1/2), m. plastic,
Soft to Firm, dry no odor | 0.0 | -- | -- | -- | |
| | 3 | (@ 2') AH
Becomes M. Firm to Firm,
greyish brown (2.5Y 5/2),
Dry, m. plastic, Fe stains,
no odor | 0.0 | -- | -- | 100% | |
| | 4 | | | | | A' SS
20B-SB01-4
@ 440 1135
AH | |
| | 5 | Becomes soft to v. soft
M. to high plastic | 0.2 | | | CL | |
| | 6 | | | | | | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO 20B-SB01

(CONTINUATION SHEET)

ZOB-580

CHAAP Tract ZOB

RECTOR
K. Wiercinski / A. Hedgerpach

2

3

2


3

| | | | |
|---------|------------|---------|----------|
| PROJECT | CHAAP RIFS | HOLE NO | 20B-5B01 |
|---------|------------|---------|----------|

(Proponent: CECW-EG)

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>20B-SB02</i> | |
|--|--|------------------------|---|----------------------------------|--------------------------------------|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | 2. DRILLING CONTRACTOR
<i>GSI Engineering</i> | | | SHEET <i>1</i> OF <i>3</i> SHEETS | |
| 3. PROJECT
<i>CHAAP - Tract 20B</i> | | | 4. LOCATION
<i>CHAAP, NE Tract 20B</i> | | | | |
| 5. NAME OF DRILLER
<i>Matthew Wold</i> | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>Geoprobe 6620 DT</i> | | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>Geoprobe Dual Tube 2" x 4'</i> | | | 8. HOLE LOCATION
<i>SB02</i> | | | | |
| | | | 9. SURFACE ELEVATION
<i>NA</i> | | | | |
| | | | 10. DATE STARTED
<i>3.15.18</i> | | 11. DATE COMPLETED
<i>3.15.18</i> | | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>NA</i> | | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | | |
| 14. TOTAL DEPTH OF HOLE
<i>8' bgs</i> | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | | |
| 18. GEOTECHNICAL SAMPLES
<i>NA</i> | | DISTURBED
<i>-</i> | | UNDISTURBED
<i>-</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>NA</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>Yes</i> | | VOC
<i>-</i> | | METALS
<i>X</i> | | OTHER (SPECIFY)
<i>EXPLOSIVES</i> | |
| | | | | | | OTHER (SPECIFY)
<i>PAHS</i> | |
| | | | | | | OTHER (SPECIFY)
<i>C.V.I</i> | |
| 22. DISPOSITION OF HOLE
<i>Soil boring</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL
<i>-</i> | | 21. TOTAL CORE
<i>NA</i> % | |
| | | | | | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepeth</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="text-align: right;">SCALE: <i>not to scale</i></div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO.
<i>20B-SB02</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
20B-SB02 |
|--|--------------|--|---|--|---------------------------------|-----------------|--|
| PROJECT
CHAAP Trout ZOB | | | INSPECTOR
K. Wierenga / A. Hedgepeth | | | SHEET
2 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | REMARKS
(g) | REMARKS
(h) |
| | | Topsoil | 0.0 | | | 100% | Surface Sample
ZOB-SS02 |
| | 1 | Lean Clay (CL) 90% Fines,
10% F. Sand, V. dark
brown (10 yr 2 1/2), m.
Plastic, Soft to M. Stiff
Dry | | - - | | - - | CL |
| | 2 | Grades to grayish
brown (2.5 Y 5/2) w/
Fe stains | 0.0 | | | | |
| | 3 | | | | | | 3-4' SB Sample
ZOB-SB02-4
@ 1225 |
| | 4 | - - - - | 0.0 | - - | | 100% | |
| | 5 | | | | | | |
| | 6 | Becomes Soft to U. Soft
M. to high plastic, dry | 0.0 | | | | |
| | 7 | | | | | | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
20B-SB02 |
|--|--------------|---------------------------------|---|--|---------------------------------|---|---------------------------------------|
| PROJECT
CHAAP Trout ZOB | | | INSPECTOR
K. Wierwille / A. Hedgepeth | | | | SHEET
3 OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | PERMANENT
SLOW COUNT
(g) | REMARKS
(h) Samples |
| | 8 | Same as above | | | | | 7-8' SB Sample
20B-SB02-8
@1230 |
| | | 0.0 | | End of boring at 8' bgs TD | | | |
| | | |  | 3-15-18 | | | |

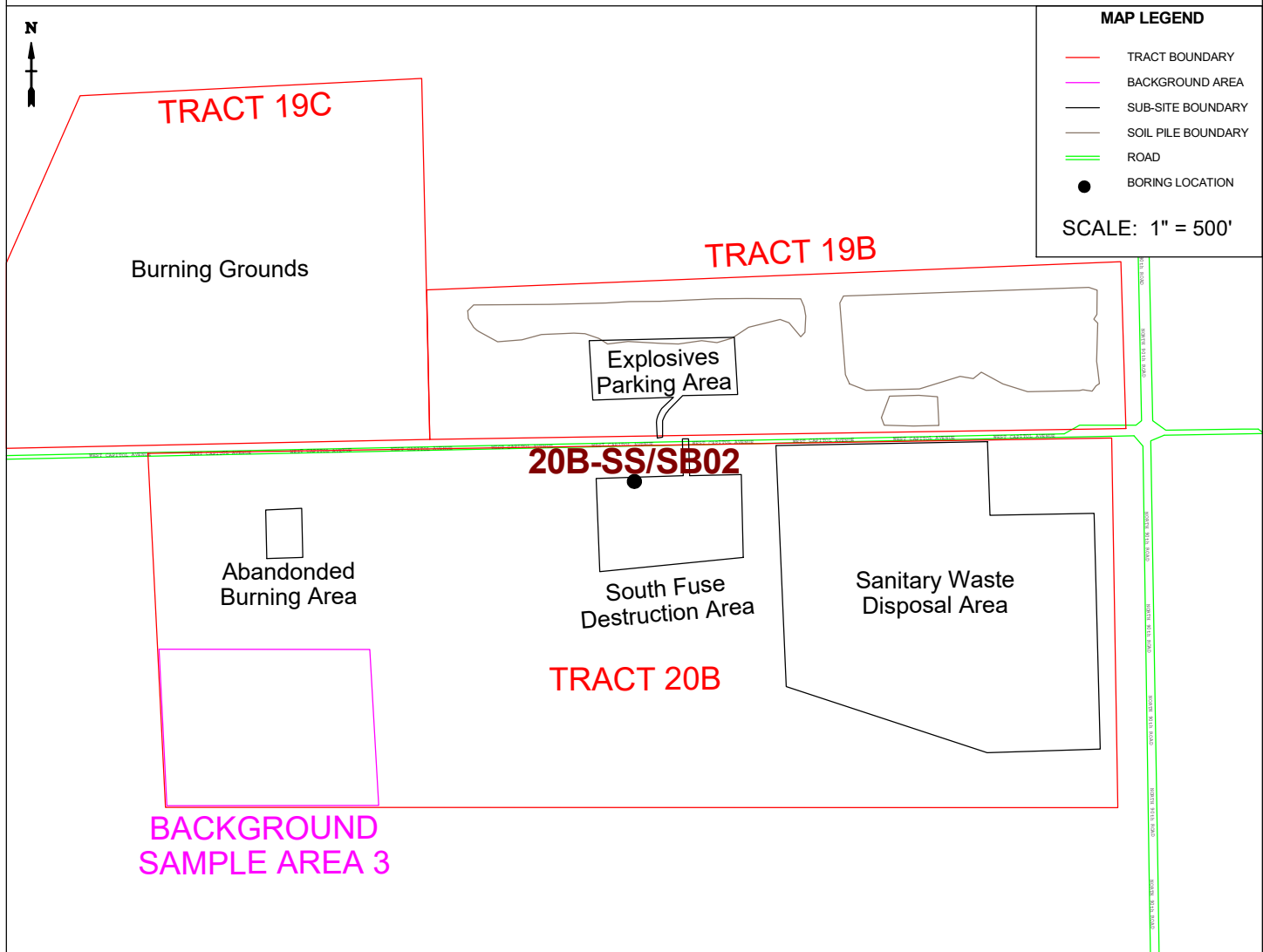
PROJECT CHAAP RIFS

HOLE NO 20B-SB02

| | | | | | |
|---|-------------------|---|---------------------------------------|----------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
20B-SS/SB02 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 3 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
6610 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

DPT, 2 inch ID/4 ft long Macro-Core sampler with disposable PVC liners. Rods and sampling equipment was decontaminated before use. 4 inch Nominal borehole diameter. | | 8. HOLE LOCATION
408714.1 North 2049757.3 East | | | |
| | | 9. SURFACE ELEVATION
-- | | | |
| | | 10. DATE STARTED
6/15/2018 | | 11. DATE COMPLETED
6/15/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
N/A | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
N/A | | | |
| 14. TOTAL DEPTH OF HOLE
12.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
1 | VOC
NA | METALS
Metals (6020) | OTHER (SPECIFY)
Explosives (8330B) | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
NO | OTHER (SPECIFY)
Soil Boring | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



| | | | |
|---------|------------------------------|---------|-------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 20B-SS/SB02 |
|---------|------------------------------|---------|-------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-SS/SB02

| PROJECT | | DISTRICT | | SHEET | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 2 | | | 3 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| | 0 | | | | | | | | | |
| | 1 | | | | | | | | | |
| | 2 | | | | | | | | | |
| | 3 | | | | | | | | | |
| | 4 | | | | | | | | | |
| | 5 | | | | | | | | | |
| | 6 | | | | | | | | | |
| | 7 | | | | | | | | | |
| | 8 | | | | | | | | | |
| | 9 | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-SS/SB02

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-SS/SB02

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 3 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
9-10 ft.
100% Rec. | SB (9-10) | | (Soil Sampled) |
| | 10 | | | | | | |
| | 11 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | HA
11-12 ft.
100% Rec. | SB (11-12) | | (Soil Sampled) |
| | 12 | Bottom of Borehole @ 12 ft | | | | | |
| | 13 | | | | | | |
| | 14 | | | | | | |
| | 15 | | | | | | |
| | 16 | | | | | | |
| | 17 | | | | | | |
| | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-SS/SB02

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>20B-SB03</i> | |
|--|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSI Engineering</i> | | SHEET <i>1</i> OF <i>3</i> | |
| 3. PROJECT
<i>CHAAP - Tract 20B</i> | | | | 4. LOCATION
<i>CHAAP, NE Tract 20B</i> | | | |
| 5. NAME OF DRILLER
<i>Matthew Wald</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>Geoprobe 6620 DT</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>Geoprobe Dual Tube 2" x 4'</i> | | | | 8. HOLE LOCATION
<i>SB03</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>3.15.18</i> | | 11. DATE COMPLETED
<i>3.15.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>NA</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>8' bgs</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES
<i>NA</i> | | DISTURBED
<i>-</i> | | UNDISTURBED
<i>-</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>NA</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>Yes</i> | | VOC
<i>-</i> | | METALS
<i>X</i> | | OTHER (SPECIFY)
<i>Explosives</i> | |
| | | | | | | OTHER (SPECIFY)
<i>PAHS</i> | |
| 22. DISPOSITION OF HOLE
<i>Soil boring</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL
<i>-</i> | | OTHER (SPECIFY)
<i>-</i> | |
| 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepeth</i> | | | | | | 21. TOTAL CORE
<i>NA</i> % | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| SCALE: <i>not to scale</i> | | | | | | | |
| | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>20B-SB03</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
20B-SB03 |
|--|--------------|---|--|--|---------------------------------|---|-------------------------|
| PROJECT
CHAAP Trout ZOB | | | INSPECTOR
K. Wierwille / A. Hedgepeth | | | SHEET
2 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | REMARKS
(h) Samples | |
| | | Topsoil | 0.0 | | | 100% Collect Surface Sample
ZOB-SS03 | |
| | 1 | Lean Clay (CL), 90% Fines
10% F. Sand, V. Dark Brown
(10 YR 2/2), m. plastic,
Soft to m. Firm, Dry | | --- | | | |
| | 2 | grades to grayish brown
(2.5 Y 5/2) w/ Fe Steins | 0.0 | | | | |
| | 3 | | | | | 3-4' SB Sample
ZOB-SB03-4
@ 1310 | |
| | 4 | --- | 0.0 | --- | | 100% --- | |
| | 5 | Becomes
V. Soft, dark olive
gray (5 Y 3/2) | | | | | |
| | 6 | Becomes
Soft grayish brown
(2.5 Y 5/2) | 0.0 | | | | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO
20B-SB0

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
20B-SB03 |
|--|--------------|---------------------------------|--|--|---------------------------------|-------------------|--|
| PROJECT
CHAAP Tract ZOB | | | INSPECTOR
K. Wierzyjski / A. Hedgpeth | | | | SHEET
3 OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLow COUNT
(g) | REMARKS
(h) Samples |
| | | Same as above | | | | | 7-8' SB sample
20B-SB03-8
@ 1315 |
| | 8 | End of boring @ 8' bgs SD | 0.0 | | | | |

| | |
|-----------------------|----------------------|
| PROJECT
CHAAP RIFS | HOLE NO.
20B-SB03 |
|-----------------------|----------------------|

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>20B-SB04</i> | |
|--|--|------------------------|--|---|--------------------------------------|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | 2. DRILLING CONTRACTOR
<i>GSI Engineering</i> | | | SHEET 1 OF 3 SHEETS | |
| 3. PROJECT
<i>CHAAP - Tract 20B</i> | | | | 4. LOCATION
<i>CHAAP, NE Tract 20B</i> | | | |
| 5. NAME OF DRILLER
<i>Matthew Wald</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>Geoprobe 6620 DT</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>Geoprobe Dual Tube 2" x 4'</i> | | | 8. HOLE LOCATION
<i>SBO4</i> | | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | 10. DATE STARTED
<i>3.15.18</i> | | 11. DATE COMPLETED
<i>3.15.18</i> | | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>NA</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>8' bgs</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES
<i>NA</i> | | DISTURBED
<i>-</i> | | UNDISTURBED
<i>-</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>NA</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>Yes</i> | | VOC
<i>-</i> | | METALS
<i>X</i> | | OTHER (SPECIFY)
<i>EXPLOSIVES</i> | |
| | | | | | | OTHER (SPECIFY)
<i>PAHs</i> | |
| | | | | | | OTHER (SPECIFY)
<i>C.V.I</i> | |
| 22. DISPOSITION OF HOLE
<i>Soil boring</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL
<i>-</i> | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepeth</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| SCALE: <i>not to scale</i> | | | | | | | |
| | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>20B-SB04</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | HOLE NUMBER
20B-SB04 | |
|--|--------------|--|--|--|---------------------------------|-------------------------------|---------------------------------------|
| PROJECT
CHAAP Tract ZOB | | | INSPECTOR
K. Wierwille / A. Hedgepeth | | | SHEET 2 OF 3 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) Samples |
| | | Topsoil | 0.3 | | | 100% | Surface Sample
ZOB-SS04 |
| | 1 | Lean Clay (CL), 90% Fines
10% F. Sand, v. Dark brown
(10 yr 3/4), m. plastic,
Soft to m. dense, dry,
Tr. Organics, no odor | | | | | |
| | 2 | Transition to grayish
brown (2.5Y 5/2), no
organics, Soft to v. Soft,
m. plastic, increase in | 0.0 | | | | |
| | 3 | Silt content, dry, Fe
Stains, no odor | | | | | 3-1' SB Sample
ZOB-SB04-4
@1035 |
| | 4 | Same as above | 0.0 | | | 100% | |
| | 5 | | | | | | |
| | 6 | | 0.0 | | | | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO
20B-SB04

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>20B-SB05</i> | |
|--|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSI Engineering</i> | | SHEET
<i>1</i> OF <i>3</i> SHEETS | |
| 3. PROJECT
<i>CHAAP - Tract 20B</i> | | | | 4. LOCATION
<i>CHAAP, NE Tract 20B</i> | | | |
| 5. NAME OF DRILLER
<i>Matthew Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>Geoprobe 6620 DT</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>Geoprobe Dual Tube 2" x 4'</i> | | | | 8. HOLE LOCATION
<i>SB05</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>3.15.18</i> | | 11. DATE COMPLETED
<i>3.15.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>NA</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>8' 6.95</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES
<i>NA</i> | | DISTURBED
<i>-</i> | | UNDISTURBED
<i>-</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>NA</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>Yes</i> | | VOC
<i>-</i> | | METALS
<i>X</i> | | OTHER (SPECIFY)
<i>Explosives</i> | |
| | | | | | | OTHER (SPECIFY)
<i>PAHs</i> | |
| | | | | | | OTHER (SPECIFY)
<i>C.V.I</i> | |
| 22. DISPOSITION OF HOLE
<i>Soil boring</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL
<i>-</i> | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepeth</i> | |
| <div style="display: flex; justify-content: space-between;"> <div>LOCATION SKETCH/COMMENTS</div> <div>SCALE: <i>not to scale</i></div> </div> <div style="text-align: center; margin-top: 20px;"> </div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>20B-SB05</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
20B-SB05 |
|--|--------------|--|---|--|---------------------------------|-----------------------------|---------------------------------------|
| PROJECT
CHAAP Trout ZOB | | | INSPECTOR
K. Wiercigo / A. Hedgepeth | | | SHEET
2 | SHEETS
OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | PERCENT
BENTONITE
(g) | REMARKS
(h) Samples |
| | | Topsoil | 0.0 | | | 100% | Surface Sample
ZOB-SS05 |
| | 1 | Lean Clay (CL), 90%
Fines, 10% F. Sand,
V. Dark brown (10YR 2/2)
M. plastic, Soft, Dry, Tr.
Organics, no odor | | | | | |
| | 2 | | 0.0 | | | | |
| | 3 | Lean Clay w/ Sand (CL)
80% Fines, 20% F. Sand
grayish brown (2.5Y 5/2),
L. plastic, M. stiff, weak,
Dry, Fe stains | 0.4 | | | | 3-4' SB Sample
ZOB-SB05-4
E0955 |
| | 4 | Same as above | 0.0 | | | 100% | |
| | 5 | | | | | | |
| | 6 | Becomes S. to V. soft,
M. plastic, decreasing
Sand w/ depth | 0.0 | | | | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO
20B-SB05

(CONTINUATION SHEET)

[illegible]

20B-5B0.5

PROJECT

CHAAP Tract ZOB

INSPECTOR

PECTOR
K. Wiercinski / A. Hedgpeth

SHEET

SHEETS

3 OF 3

OF 3

ELEV.

(a)

DEPTH

(b)

DESCRIPTION OF MATERIALS

(c)

FIELD SCREENING

PID

(d)

GEOTECH SAMPLE

OR CORE BOX NO.

ANALYTICAL

SAMPLE NO.

Revised

~~BLOW COU~~

REMARKS /

(h) Samples

Same as above

0.0

0.0

| | |
|------------------|-----------|
| End of boring at | 8' bgs TD |
|------------------|-----------|

~~ASA~~ 3.15.18

PROJECT

CHAAP RIFS

| | |
|---------|--|
| HOLE NO | |
|---------|--|

20B-5B05

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>20B-SB06</i> | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSI Engineering</i> | | SHEET 1 OF 3 SHEETS | |
| 3. PROJECT
<i>CHAAP - Tract 20B</i> | | | | 4. LOCATION
<i>CHAAP, NE Tract 20B</i> | | | |
| 5. NAME OF DRILLER
<i>Matthew Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>Geoprobe 6620 DT</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>Geoprobe Dual Tube 2" x 4'</i> | | | | 8. HOLE LOCATION
<i>SBO6</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>3.15.18</i> | | 11. DATE COMPLETED
<i>3.15.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>NA</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>8' bgs</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES
<i>NA</i> | | DISTURBED
<i>-</i> | | UNDISTURBED
<i>-</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>NA</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>Yes</i> | | VOC | | METALS
<i>X</i> | | OTHER (SPECIFY)
<i>Explosives</i> | |
| | | | | | | OTHER (SPECIFY)
<i>PAHs</i> | |
| | | | | | | OTHER (SPECIFY)
<i>C. VI</i> | |
| 22. DISPOSITION OF HOLE
<i>Soil boring</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 21. TOTAL CORE
<i>NA</i> % | |
| | | | | | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepeth</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="position: relative; width: 100%; height: 100%;"> <div style="position: absolute; left: 10%; top: 10%;"> <div style="text-align: center;">↑</div> <div style="text-align: center;">N</div> </div> <div style="position: absolute; left: 30%; top: 40%;"> <div style="border-bottom: 2px solid black; width: 100%;"></div> <div style="text-align: center; margin-top: 5px;"><i>W. Capital Road</i></div> </div> <div style="position: absolute; left: 30%; top: 60%;"> <div style="text-align: center;"> <div style="display: inline-block; width: 100px; height: 100px; border-left: 1px solid black; border-bottom: 1px solid black;"></div> <div style="margin-left: 10px;"> <div style="text-align: center;">11.5'</div> <div style="text-align: center;">10.5'</div> </div> </div> </div> <div style="position: absolute; left: 30%; top: 65%;"> <div style="text-align: center;"> <div style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; margin: 0 auto;"></div> <div style="margin-top: 5px;"><i>663A-MW08</i></div> </div> </div> <div style="position: absolute; left: 50%; top: 65%;"> <div style="text-align: center;"> <div style="border: 1px solid black; border-radius: 50%; width: 15px; height: 15px; margin: 0 auto;"></div> <div style="margin-top: 5px;"><i>SBO6</i></div> </div> </div> </div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>20B-SB06</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
20B-SB06 |
|--|--------------|---|---|--|---------------------------------|-------------------------------|---------------------------------------|
| PROJECT
CHAAP Trout ZOB | | | INSPECTOR
K. Wierenga / A. Hedgepeth | | | SHEET
2 | SHEETS
3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | RECOVERY
BLOW COUNT
(g) | REMARKS
(h) Samples |
| | | Topsoil | 0.0 | | | 100% | Surface Sample
20B-SB06 |
| | 1 | Lean Clay (LL) 90% fines,
10% F. Sand, V. Dark Bn
(10YR 2/2), m. plastic,
Soft to firm, dry, no odor | | | | | |
| | 2 | Becomes grayish Bn
(2.5Y 5/2), m. plastic,
dry, Fe stains | 0.2 | | | | |
| | 3 | | | | | | 3-4' SB sample
20B-SB06-4
@1205 |
| | 4 | Same as above | 0.0 | | | 100% | |
| | 5 | | | | | | |
| | 6 | | 0.0 | | | | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO 20B-SB06

(CONTINUATION SHEET)

20B-5B06

CHAAP Tract ZOB

PECTOR
K. Wiercinski / A. Hedgepeth

SHEETS

3 OF 3

DEPTH
(b)

DESCRIPTION OF MATERIALS

FIELD SCREENING
AID
(d)

GEOTECH SAMPLE
OR CORE BOX NO.

| | |
|--------------------------|-----|
| ANALYTICAL
SAMPLE NO. | (f) |
|--------------------------|-----|

~~SECRET~~
BLOW COUNT
(g)

REMARKS
(h) *Sam*

n) Samples

Same as above

Becomes soft to soft

8

0.0


| | |
|-------------------------|----|
| End of boring at 8' 695 | 51 |
|-------------------------|----|

3.15.18

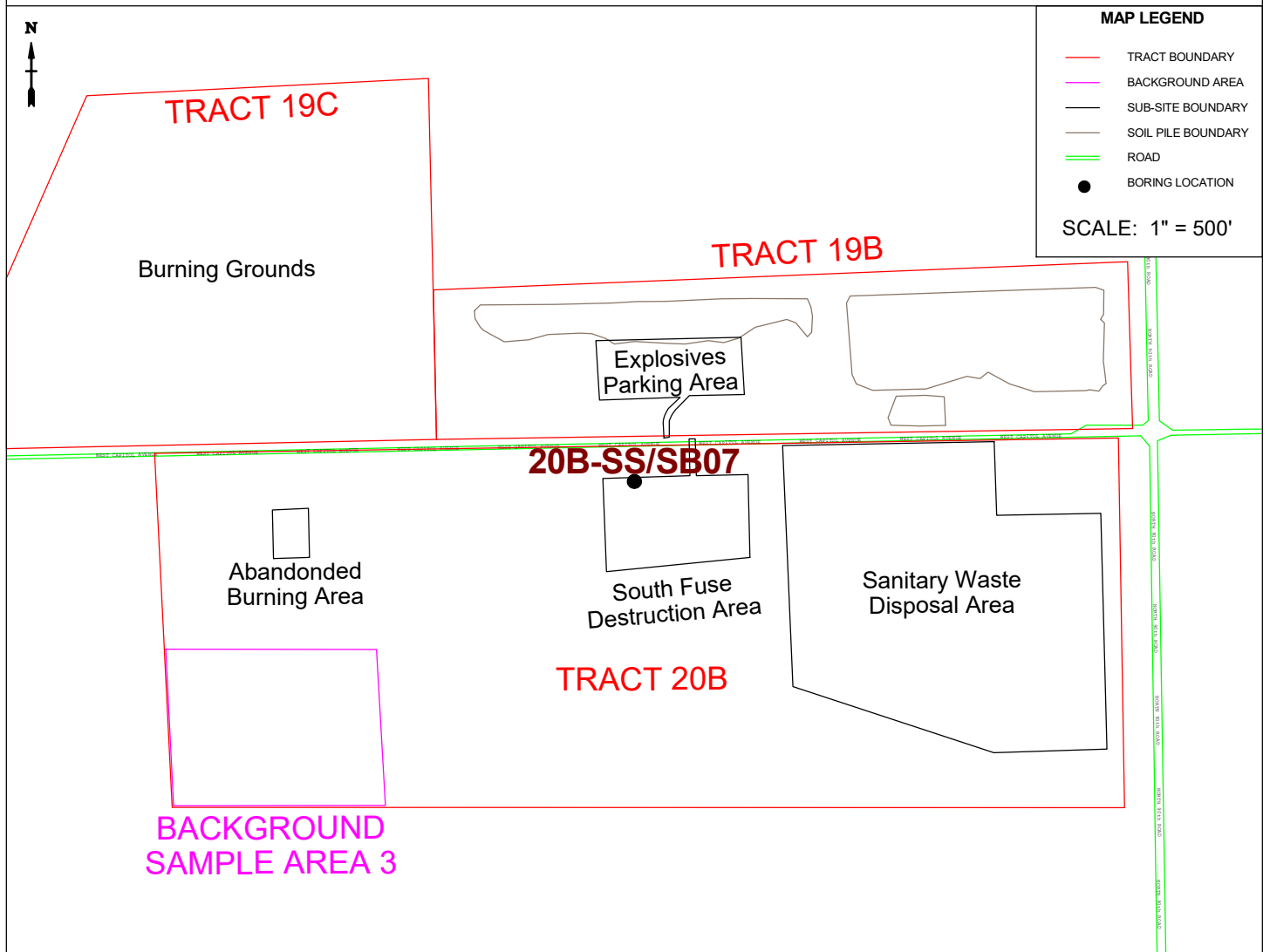
CHAAP RIFS

20B-5B06

| | | | | | |
|---|-------------------|---|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
20B-SS/SB07 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 3 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
6610 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

DPT, 2 inch ID/4 ft long Macro-Core sampler with disposable PVC liners. Rods and sampling equipment was decontaminated before use. 4 inch Nominal borehole diameter. | | 8. HOLE LOCATION
408714.1 North 2049737.3 East | | | |
| | | 9. SURFACE ELEVATION
-- | | | |
| | | 10. DATE STARTED
6/15/2018 | | 11. DATE COMPLETED
6/15/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
N/A | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
N/A | | | |
| 14. TOTAL DEPTH OF HOLE
12.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
4 | VOC
NA | METALS
Metals (6020) | OTHER (SPECIFY)
Explosives (8330B) | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
NO | OTHER (SPECIFY)
Soil Boring | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-SS/SB07

| PROJECT | | DISTRICT | | ANALYTICAL | | BLOW COUNT | | SHEETS | |
|-------------------------------|--------------|--|--|--|-------------------|------------|--|--|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | | 2 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | SAMPLE NO.
(f) | | | REMARKS
(h) | |
| | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | HA
0-0.5 ft.
100% Rec. | SS (0-0.5) | | | (Soil Sampled)
HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery | |
| | 1 | | | | | | | | |
| | 2 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | | | |
| | 3 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
3-4 ft.
100% Rec. | SB (3-4) | | | (Soil Sampled) | |
| | 4 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | | | |
| | 5 | | | | | | | | |
| | 6 | | | | | | | | |
| | 7 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
7-8 ft.
100% Rec. | SB (7-8) | | | (Soil Sampled) | |
| | 8 | | | | | | | | |
| | 9 | (CL) LEAN CLAY (95%): Low to medium plasticity, medium toughness, medium dry strength, no dilatancy, dry, friable, fine sand | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-SS/SB07

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-SS/SB07

| PROJECT | | DISTRICT | | HOLE NUMBER | | | SHEET | |
|-------------------------------|--------------|--|--|--|---------------------------------|-------------------|----------------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 20B-SS/SB07 | | | 3 OF 3 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| | 9 | (5%). (10GY 5/1)
(CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
9-10 ft.
100% Rec. | SB (9-10) | | (Soil Sampled) | |
| | 10 | | | | | | | |
| | 11 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | HA
11-12 ft.
100% Rec. | SB (11-12) | | | |
| | 12 | Bottom of Borehole @ 12 ft | | | | | | |
| | 13 | | | | | | | |
| | 14 | | | | | | | |
| | 15 | | | | | | | |
| | 16 | | | | | | | |
| | 17 | | | | | | | |
| | 18 | | | | | | | |

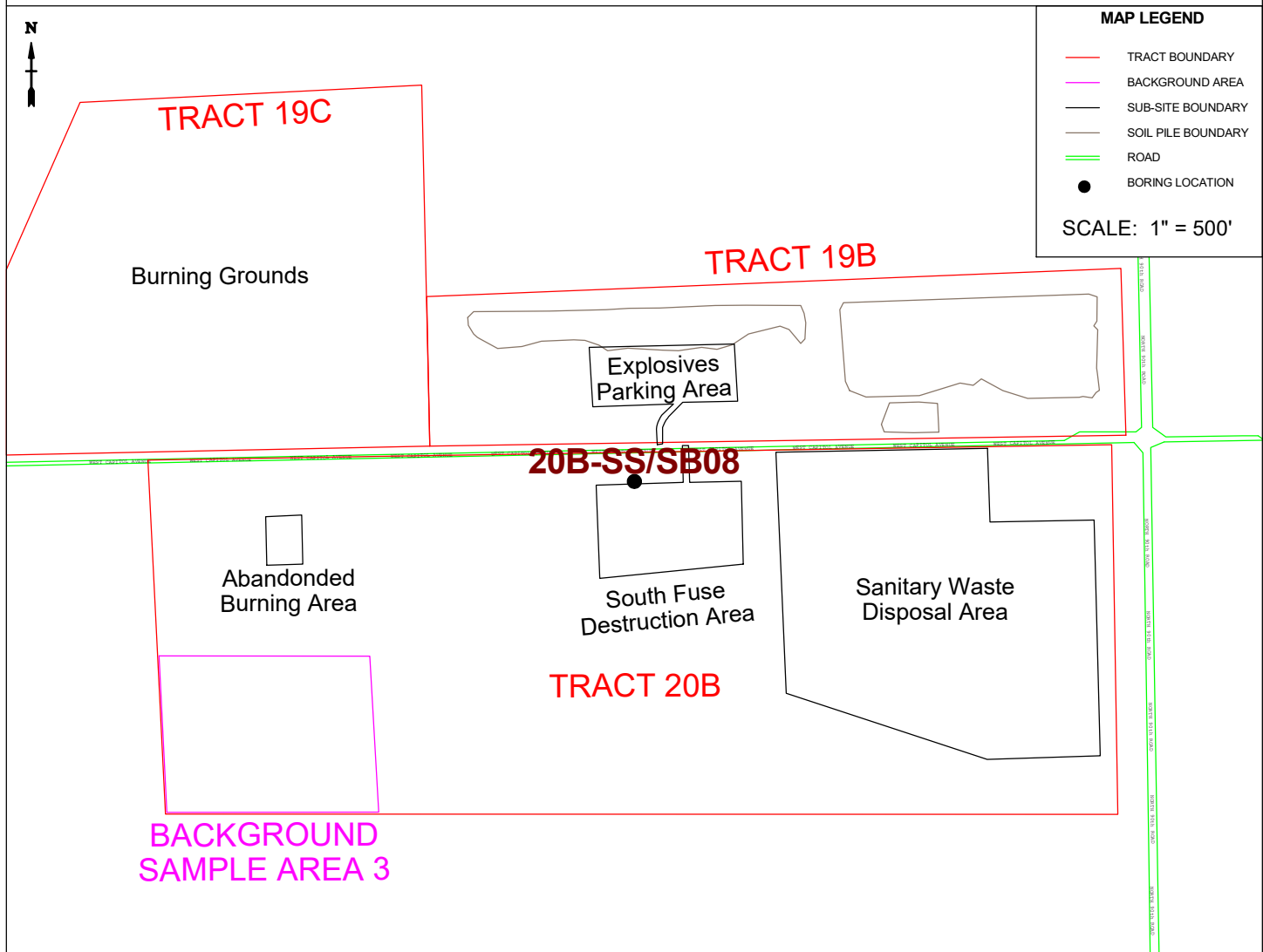
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-SS/SB07

| | | | | | |
|---|-------------------|---|---------------------------------------|----------------------------------|------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
20B-SS/SB08 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 3 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
6610 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

DPT, 2 inch ID/4 ft long Macro-Core sampler with disposable PVC liners. Rods and sampling equipment was decontaminated before use. 4 inch Nominal borehole diameter. | | 8. HOLE LOCATION
408734.1 North 2049757.3 East | | | |
| | | 9. SURFACE ELEVATION
-- | | | |
| | | 10. DATE STARTED
6/15/2018 | | 11. DATE COMPLETED
6/15/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
N/A | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
N/A | | | |
| 14. TOTAL DEPTH OF HOLE
12.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
4 | VOC
NA | METALS
Metals (6020) | OTHER (SPECIFY)
Explosives (8330B) | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
NO | OTHER (SPECIFY)
Soil Boring | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-SS/SB08

| PROJECT | | DISTRICT | | ANALYTICAL | | BLOW COUNT | | SHEETS | |
|-------------------------------|--------------|--|--|--|-------------------|------------|--|--|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | | 2 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | SAMPLE NO.
(f) | | | REMARKS
(h) | |
| | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | HA
0-0.5 ft.
100% Rec. | SS (0-0.5) | | | (Soil Sampled)
HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery | |
| | 1 | | | | | | | | |
| | 2 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | | | |
| | 3 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
3-4 ft.
100% Rec. | SB (3-4) | | | (Soil Sampled) | |
| | 4 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | | | |
| | 5 | | | | | | | | |
| | 6 | | | | | | | | |
| | 7 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
7-8 ft.
100% Rec. | SB (7-8) | | | (Soil Sampled) | |
| | 8 | | | | | | | | |
| | 9 | (CL) LEAN CLAY (95%): Low to medium plasticity, medium toughness, medium dry strength, no dilatancy, dry, friable, fine sand | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-SS/SB08

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-SS/SB08

| PROJECT | | DISTRICT | | FIELD SCREENING RESULTS | | GEOTECH SAMPLE OR CORE BOX NO. | | ANALYTICAL SAMPLE NO. | | BLOW COUNT | | REMARKS | |
|--------------|--------------|--|--|--|--|--------------------------------|--|-----------------------|--|------------|--|----------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | RESULTS
(d) | | OR CORE BOX NO.
(e) | | SAMPLE NO.
(f) | | (g) | | (h) | |
| | 9 | (5%). (10GY 5/1) | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | | DPT
9-10 ft.
100% Rec. | | SB (9-10) | | | | (Soil Sampled) | |
| | 10 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | | | | | | | |
| | 11 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | | HA
11-12 ft.
100% Rec. | | SB (11-12) | | | | | |
| | 12 | Bottom of Borehole @ 12 ft | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | |
| | 18 | | | | | | | | | | | | |

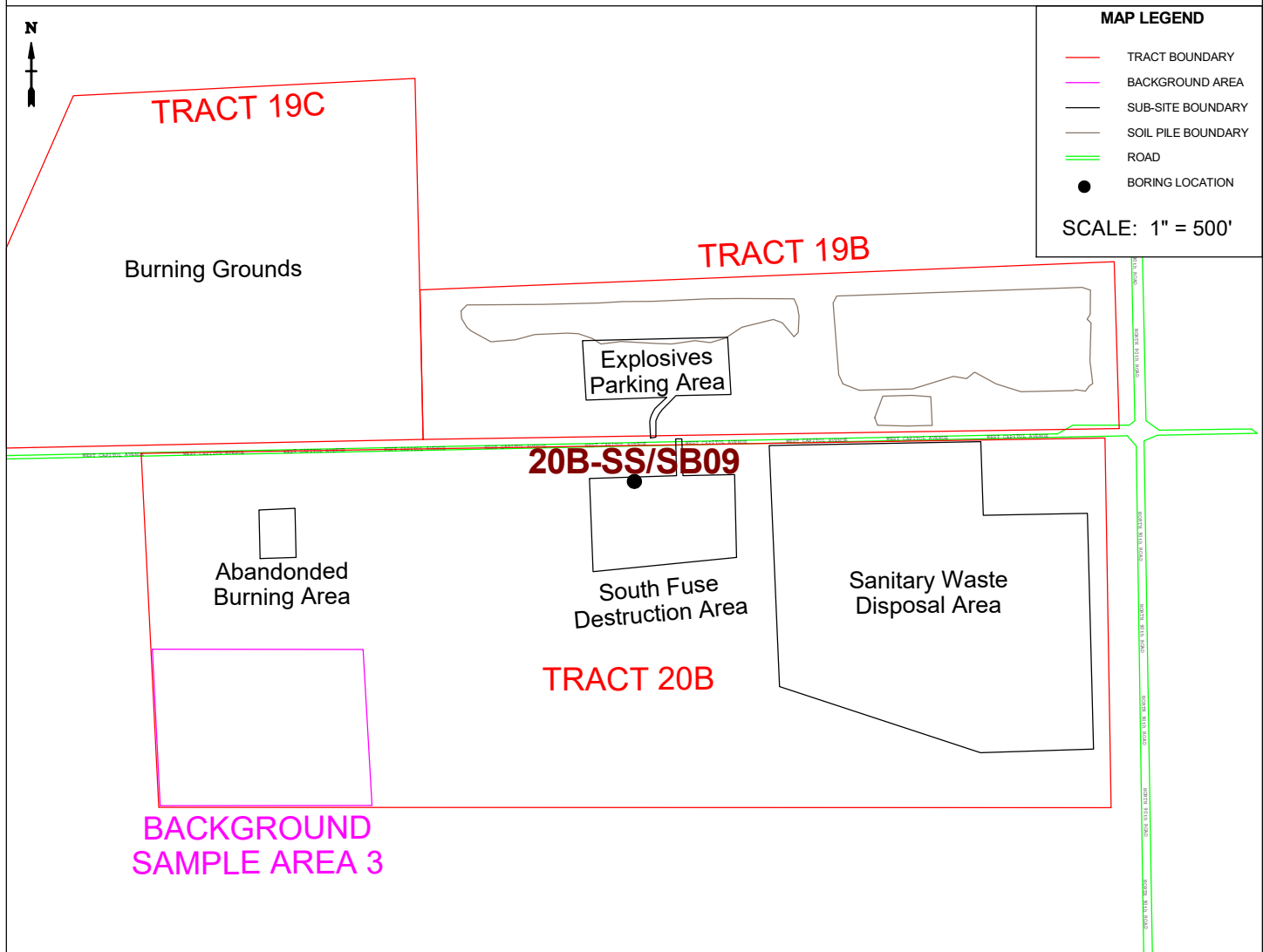
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-SS/SB08

| | | | | | |
|---|-------------------|---|---------------------------------------|----------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
20B-SS/SB09 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 3 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
6610 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

DPT, 2 inch ID/4 ft long Macro-Core sampler with disposable PVC liners. Rods and sampling equipment was decontaminated before use. 4 inch Nominal borehole diameter. | | 8. HOLE LOCATION
408714.1 North 2049777.3 East | | | |
| | | 9. SURFACE ELEVATION
-- | | | |
| | | 10. DATE STARTED
6/15/2018 | | 11. DATE COMPLETED
6/15/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
N/A | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
N/A | | | |
| 14. TOTAL DEPTH OF HOLE
12.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
4 | VOC
NA | METALS
Metals (6020) | OTHER (SPECIFY)
Explosives (8330B) | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
NO | OTHER (SPECIFY)
Soil Boring | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-SS/SB09

| PROJECT | | DISTRICT | | ANALYTICAL | | BLOW COUNT | | SHEETS | |
|-------------------------------|--------------|--|--|--|-------------------|------------|--|--|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | | 2 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | SAMPLE NO.
(f) | | | REMARKS
(h) | |
| | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | HA
0-0.5 ft.
100% Rec. | SS (0-0.5) | | | (Soil Sampled)
HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery | |
| | 1 | | | | | | | | |
| | 2 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | | | |
| | 3 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
3-4 ft.
100% Rec. | SB (3-4) | | | (Soil Sampled) | |
| | 4 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | | | |
| | 5 | | | | | | | | |
| | 6 | | | | | | | | |
| | 7 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
7-8 ft.
100% Rec. | SB (7-8) | | | (Soil Sampled) | |
| | 8 | | | | | | | | |
| | 9 | (CL) LEAN CLAY (95%): Low to medium plasticity, medium toughness, medium dry strength, no dilatancy, dry, friable, fine sand | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-SS/SB09

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


20B-SS/SB09

| PROJECT | | DISTRICT | | HOLE NO | | SHEET | |
|-------------------------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 20B-SS/SB09 | | 3 OF 3 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | 9 | (5%). (10GY 5/1)
(CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
9-10 ft.
100% Rec. | SB (9-10) | | (Soil Sampled) |
| | 10 | | | | | | |
| | 11 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | HA
11-12 ft.
100% Rec. | SB (11-12) | | (Soil Sampled) |
| | 12 | Bottom of Borehole @ 12 ft | | | | | |
| | 13 | | | | | | |
| | 14 | | | | | | |
| | 15 | | | | | | |
| | 16 | | | | | | |
| | 17 | | | | | | |
| | 18 | | | | | | |

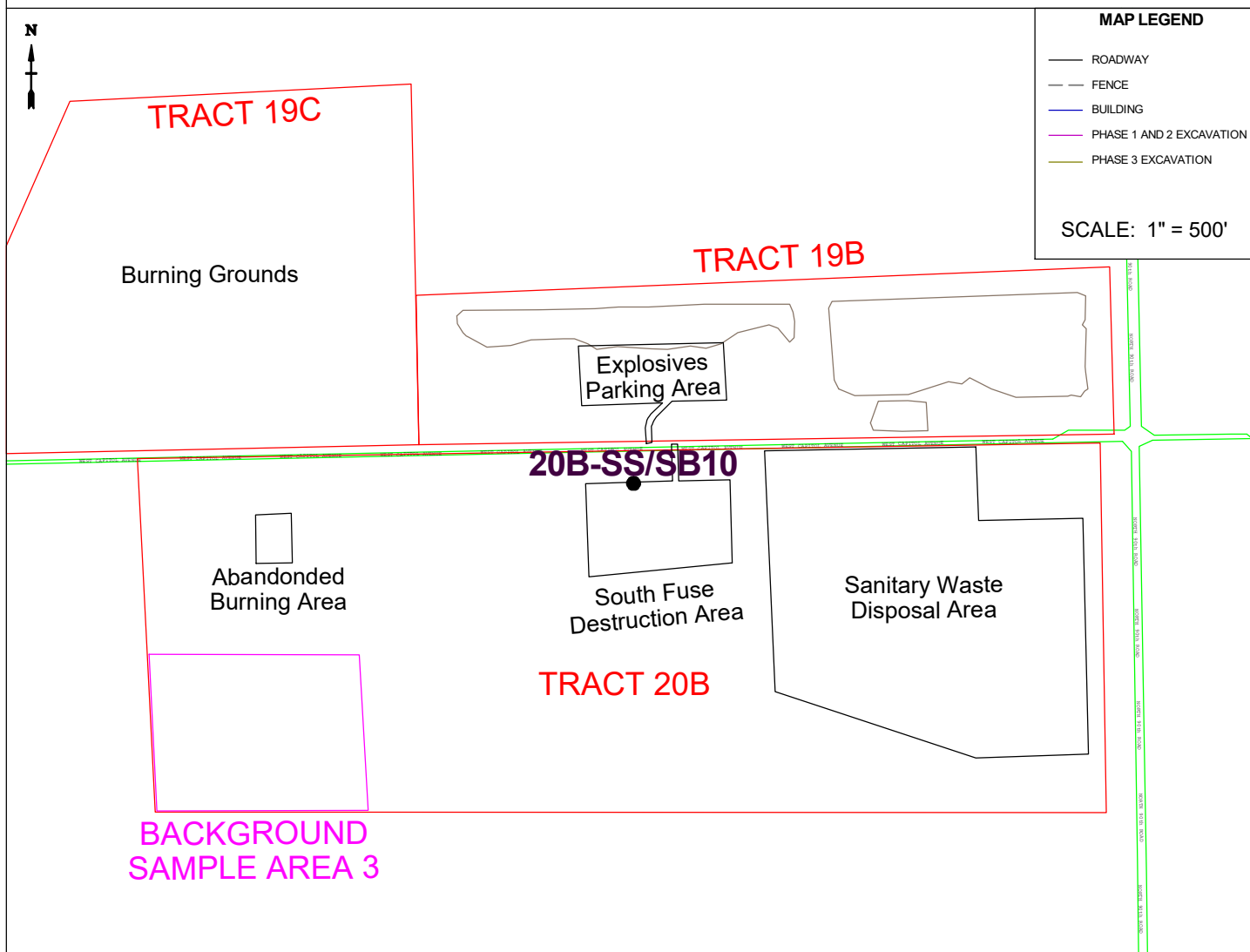
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-SS/SB09

| | | | | | |
|---|-------------------|---|---------------------------------------|--|------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
20B-SS/SB10 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 2 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
6610 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

DPT, 2 inch ID/4 ft long Macro-Core sampler with disposable PVC liners. Rods and sampling equipment was decontaminated before use. 2.5 inch Nominal borehole diameter. | | 8. HOLE LOCATION
408724.1 North 2049787.3 East | | | |
| | | 9. SURFACE ELEVATION
-- | | | |
| | | 10. DATE STARTED
7/25/2018 | | 11. DATE COMPLETED
7/25/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
N/A | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
N/A | | | |
| 14. TOTAL DEPTH OF HOLE
8.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
2 | VOC
NA | METALS
NA | OTHER (SPECIFY)
RDX (8330B) | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
NO | OTHER (SPECIFY)
Soil Boring | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-SS/SB10

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 2 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|---|
| | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
0-0.5 ft.
100% Rec. | SS (0-0.5) | | (Soil Sampled)
HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery |
| | 1 | | | | | | |
| | 2 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| | 3 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
3-4 ft.
100% Rec. | | | |
| | 4 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| | 5 | | | | | | |
| | 6 | | | | | | |
| | 7 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
7-8 ft.
100% Rec. | SB (7-8) | | (Soil Sampled) |
| | 8 | Bottom of Borehole @ 8 ft | | | | | |
| | 9 | | | | | | |

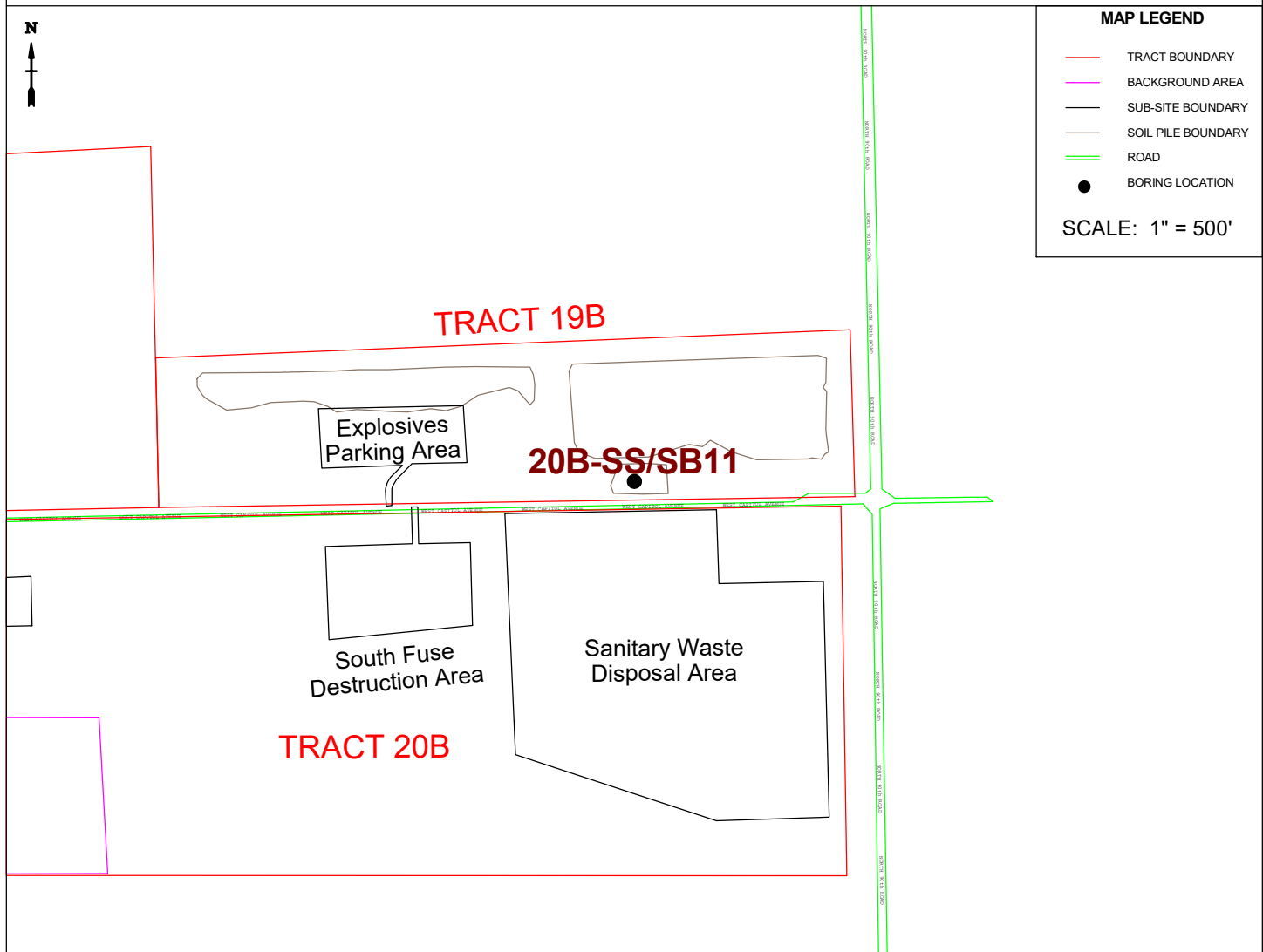
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-SS/SB10

| | | | | | |
|---|-------------------|---|---------------------------------------|----------------------------------|------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
20B-SS/SB11 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 3 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
6610 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

DPT, 2 inch ID/4 ft long Macro-Core sampler with disposable PVC liners. Rods and sampling equipment was decontaminated before use. 4 inch Nominal borehole diameter. | | 8. HOLE LOCATION
408917.5 North 2050566.0 East | | | |
| | | 9. SURFACE ELEVATION
-- | | | |
| | | 10. DATE STARTED
8/13/2018 | 11. DATE COMPLETED
8/13/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
N/A | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
N/A | | | |
| 14. TOTAL DEPTH OF HOLE
10.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
4 | VOC
NA | METALS
NA | OTHER (SPECIFY)
RDX (8330B) | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
NO | OTHER (SPECIFY)
Soil Boring | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



| | |
|--|------------------------|
| PROJECT CHAAP Grand Island, Nebraska | HOLE NO 20B-SS/SB11 |
|--|------------------------|

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-SS/SB11

| PROJECT | | DISTRICT | | ANALYTICAL | | BLOW COUNT | | SHEETS | |
|-------------------------------|--------------|--|--|--|-------------------|------------|--|--|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | | 2 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | SAMPLE NO.
(f) | | | REMARKS
(h) | |
| | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | HA
0-0.5 ft.
100% Rec. | SS (0-0.5) | | | (Soil Sampled)
HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery | |
| | 1 | | | | | | | | |
| | 2 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | | | |
| | 3 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
3-4 ft.
100% Rec. | SB (3-4) | | | (Soil Sampled) | |
| | 4 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | | | |
| | 5 | | | | | | | | |
| | 6 | | | | | | | | |
| | 7 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
7-8 ft.
100% Rec. | SB (7-8) | | | (Soil Sampled) | |
| | 8 | | | | | | | | |
| | 9 | (CL) LEAN CLAY (95%): Low to medium plasticity, medium toughness, medium dry strength, no dilatancy, dry, friable, fine sand | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-SS/SB11

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-SS/SB11

| PROJECT | | DISTRICT | | ANALYTICAL | | | SHEET | |
|-------------------------------|--------------|--|--|--|---------------------------------|-------------------|----------------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | SAMPLE NO. | | | 3 OF 3 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| | 9 | (5%). (10GY 5/1)
(CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
9-10 ft.
100% Rec. | SB (9-10) | | (Soil Sampled) | |
| | 10 | Bottom of Borehole @ 10 ft | | | | | | |
| | 11 | | | | | | | |
| | 12 | | | | | | | |
| | 13 | | | | | | | |
| | 14 | | | | | | | |
| | 15 | | | | | | | |
| | 16 | | | | | | | |
| | 17 | | | | | | | |
| | 18 | | | | | | | |

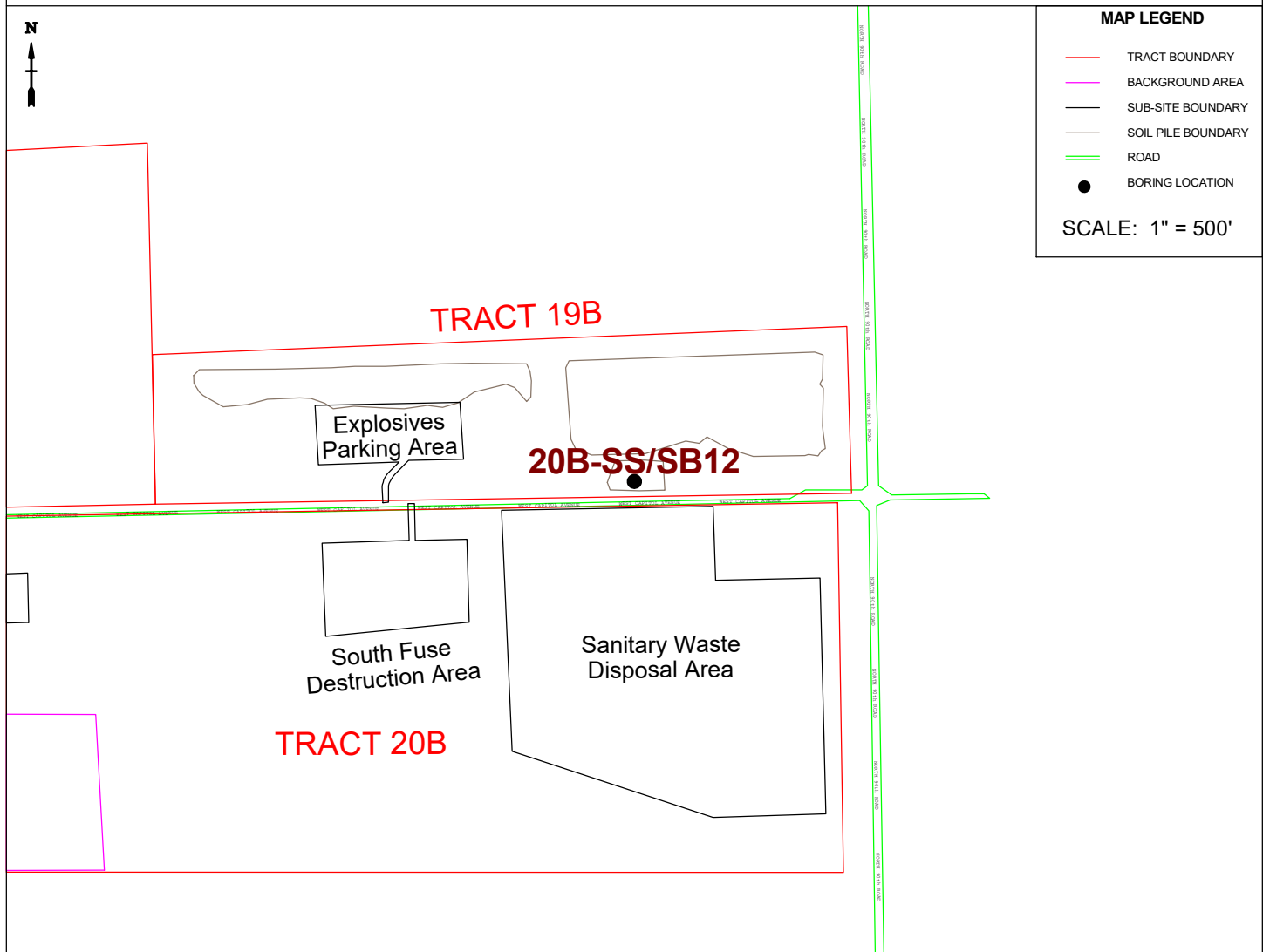
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-SS/SB11

| | | | | | | | | |
|---|--|-------------------|---|-----------------------|--|---------------------------------------|-----------------|----------------------------------|
| HTRW DRILLING LOG | | | DISTRICT
US Army Corps of Engineers - Omaha District | | | HOLE NUMBER
20B-SS/SB12 | | |
| 1. COMPANY NAME
ATI / HGL | | | 2. DRILLING CONTRACTOR
GSI | | | | SHEET
1 OF 3 | |
| 3. PROJECT
CHAAP | | | 4. LOCATION
Grand Island, Nebraska | | | | | |
| 5. NAME OF DRILLER
J. Tinnell | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
6610 Geoprobe | | | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

DPT, 2 inch ID/4 ft long Macro-Core sampler with disposable PVC liners. Rods and sampling equipment was decontaminated before use. 4 inch Nominal borehole diameter. | | | 8. HOLE LOCATION
408907.5 North 2050576.0 East | | | | | |
| | | | 9. SURFACE ELEVATION
-- | | | | | |
| | | | 10. DATE STARTED
8/13/2018 | | | 11. DATE COMPLETED
8/13/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | | 15. DEPTH GROUNDWATER ENCOUNTERED
N/A | | | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
N/A | | | | | |
| 14. TOTAL DEPTH OF HOLE
10.0 Feet Below the Ground Surface | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | | | |
| 18. GEOTECHNICAL SAMPLES
0 | | DISTURBED
N/A | | UNDISTURBED
N/A | | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
4 | | VOC
NA | | METALS
NA | | OTHER (SPECIFY)
RDX (8330B) | | 21. TOTAL CORE RECOVERY
N/A % |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | | BACKFILLED
N/A | | MONITORING WELL
NO | | OTHER (SPECIFY)
Soil Boring | | 23. SIGNATURE OF INSPECTOR |

LOCATION SKETCH/COMMENTS



| | |
|--|-------------------------|
| PROJECT CHAAP Grand Island, Nebraska | HOLE NO 20B-SS/SB12 |
|--|-------------------------|

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-SS/SB12

| PROJECT | | DISTRICT | | ANALYTICAL | | BLOW COUNT | | SHEETS | |
|-------------------------------|--------------|--|--|--|-------------------|------------|--|--|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | | 2 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | SAMPLE NO.
(f) | | | REMARKS
(h) | |
| | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | HA
0-0.5 ft.
100% Rec. | SS (0-0.5) | | | (Soil Sampled)
HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery | |
| | 1 | | | | | | | | |
| | 2 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | | | |
| | 3 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
3-4 ft.
100% Rec. | SB (3-4) | | | (Soil Sampled) | |
| | 4 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | | | |
| | 5 | | | | | | | | |
| | 6 | | | | | | | | |
| | 7 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
7-8 ft.
100% Rec. | SB (7-8) | | | (Soil Sampled) | |
| | 8 | | | | | | | | |
| | 9 | (CL) LEAN CLAY (95%): Low to medium plasticity, medium toughness, medium dry strength, no dilatancy, dry, friable, fine sand | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-SS/SB12

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-SS/SB12

| PROJECT | | DISTRICT | | HOLE NUMBER | | | SHEET | |
|-------------------------------|--------------|--|--|--|---------------------------------|-------------------|----------------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 20B-SS/SB12 | | | 3 OF 3 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| | 9 | (5%). (10GY 5/1)
(CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | DPT
9-10 ft.
100% Rec. | SB (9-10) | | (Soil Sampled) | |
| | 10 | Bottom of Borehole @ 10 ft | | | | | | |
| | 11 | | | | | | | |
| | 12 | | | | | | | |
| | 13 | | | | | | | |
| | 14 | | | | | | | |
| | 15 | | | | | | | |
| | 16 | | | | | | | |
| | 17 | | | | | | | |
| | 18 | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

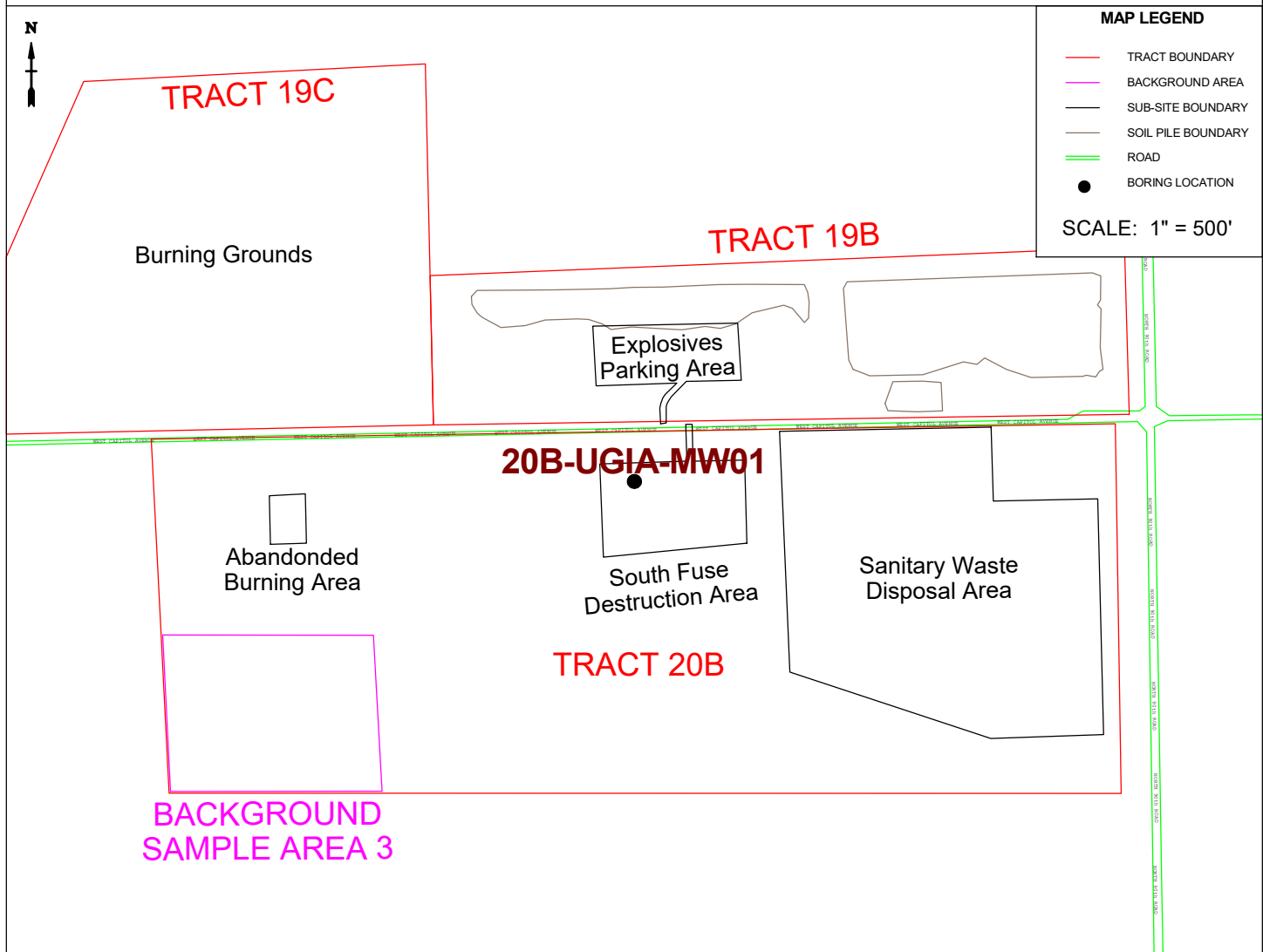
HOLE NO 20B-SS/SB12

**Tract 20B Boring Logs
Monitoring Wells**

| | | | | | |
|--|-------------------|---|---------------------------------------|----------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
20B-UGIA-MW01 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
408671.3 North 2049746.8 East | | | |
| | | 9. SURFACE ELEVATION
1902.1' MSL | | | |
| | | 10. DATE STARTED
3/18/2018 | 11. DATE COMPLETED
3/18/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
11 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
6.61 ft on 4/2/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
19.2 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



| | |
|--|--------------------------|
| PROJECT CHAAP Grand Island, Nebraska | HOLE NO 20B-UGIA-MW01 |
|--|--------------------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-UGIA-MW01

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|--|
| 1902.1 | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | HA
0-4 ft. | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1901.1 | 1 | | | | | | |
| 1900.1 | 2 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1899.1 | 3 | | | | | | |
| 1898.1 | 4 | | | | | | |
| 1897.1 | 5 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1896.1 | 6 | | | | | | |
| 1895.1 | 7 | | | | | | |
| 1894.1 | 8 | | | | | | |
| 1893.1 | 9 | (CL) LEAN CLAY (95%): Low to medium plasticity, medium toughness, medium dry strength, no dilatancy, dry, friable, fine sand | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
8.5-10 ft.
100% Rec. | | 1 | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-UGIA-MW01

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-UGIA-MW01

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET | | 3 | | OF | | 4 | | SHEETS | |
|--------------|--------------|--|--|----------|--|---|--|---------------------------------|-------------------|----------------|--|----|--|---|--|--------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | | | | |
| 1893.1 | 9 | (5%). (10GY 5/1)
(CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | | | 2 | | | | | | | | |
| 1892.1 | 10 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | | | 3 | | | | | | | | |
| 1891.1 | 11 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | | | | | | | | | | |
| 1890.1 | 12 | | | | | | | | | | | | | | | | |
| 1889.1 | 13 | | | | | | | | | | | | | | | | |
| 1888.1 | 14 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
13.5-15 ft.
100% Rec. | | | 2 | 1

4 | | | | | | | |
| 1887.1 | 15 | | | | | | | | | | | | | | | | |
| 1886.1 | 16 | | | | | | | | | | | | | | | | |
| 1885.1 | 17 | | | | | | | | | | | | | | | | |
| 1884.1 | 18 | | | | | | | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-UGIA-MW01

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


20B-UGIA-MW01

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 4 | | | | 4 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1884.1 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | | | |
| 1883.1 | 19 | | | | | | | | | | |
| 1882.1 | 20 | Bottom of Borehole @ 19.2 ft
10 Gallons of Water Lost During Drilling
Heaving Sands11-19.2 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | | | |
| 1881.1 | 21 | | | | | | | | | | |
| 1880.1 | 22 | | | | | | | | | | |
| 1879.1 | 23 | | | | | | | | | | |
| 1878.1 | 24 | | | | | | | | | | |
| 1877.1 | 25 | | | | | | | | | | |
| 1876.1 | 26 | | | | | | | | | | |
| 1875.1 | 27 | | | | | | | | | | |

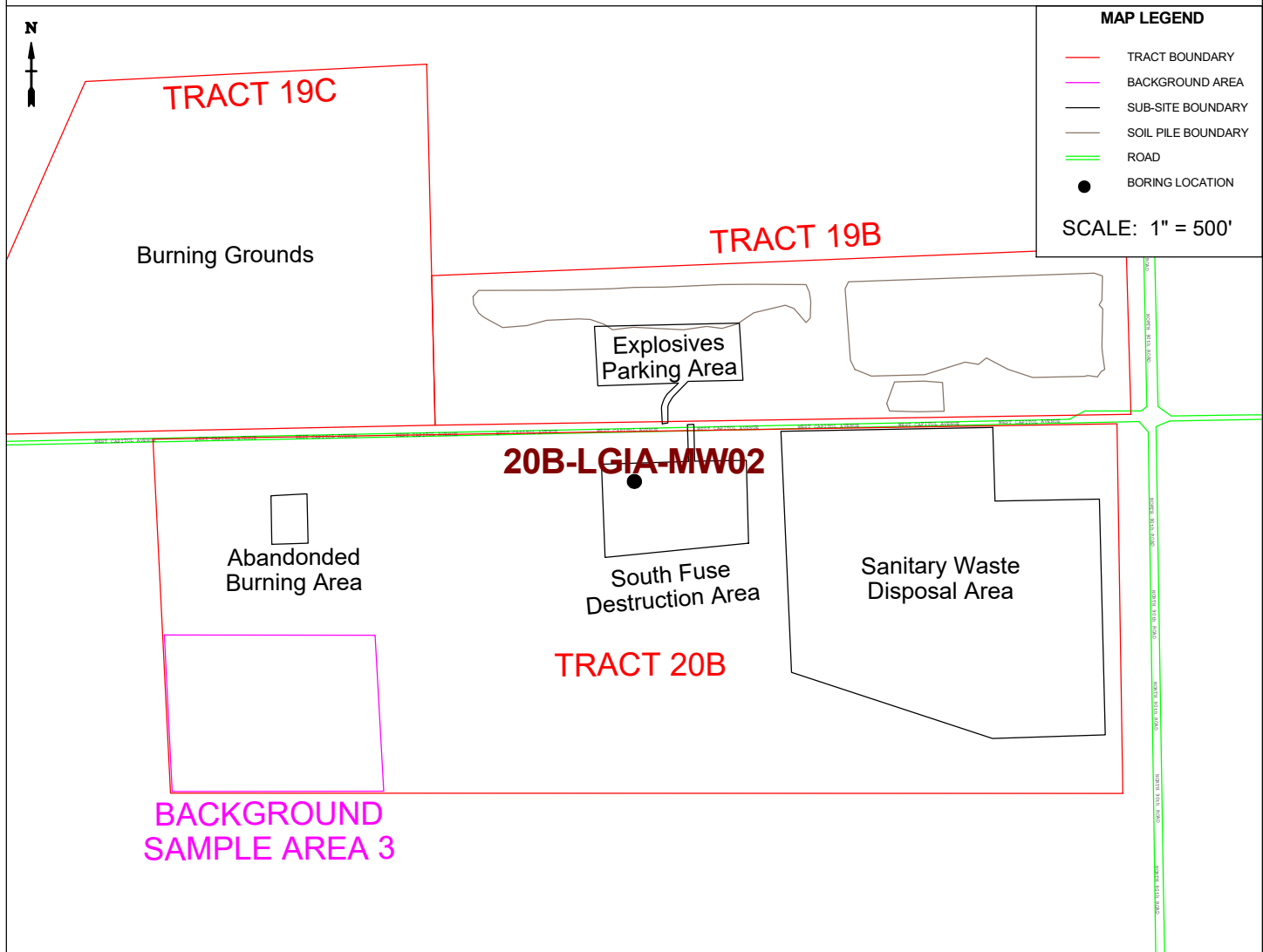
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-UGIA-MW01

| | | | | | |
|--|-------------------|--|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
20B-LGIA-MW02 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 6 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
408671.5 North 2049741.8 East | | | |
| | | 9. SURFACE ELEVATION
1902.2' MSL | | | |
| | | 10. DATE STARTED
3/18/2018 | 11. DATE COMPLETED
3/18/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
11 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
6.34 ft 3 Hrs Post-Install | | | |
| 14. TOTAL DEPTH OF HOLE
40.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
6.34 (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



| | |
|--|---------------------------|
| PROJECT CHAAP Grand Island, Nebraska | HOLE NO 20B-LGIA-MW02 |
|--|---------------------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-LGIA-MW02

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|--|
| 1902.2 | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | HA
0-4 ft. | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1901.2 | 1 | | | | | | |
| 1900.2 | 2 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1899.2 | 3 | | | | | | |
| 1898.2 | 4 | | | | | | |
| 1897.2 | 5 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1896.2 | 6 | | | | | | |
| 1895.2 | 7 | | | | | | |
| 1894.2 | 8 | | | | | | |
| 1893.2 | 9 | (CL) LEAN CLAY (95%): Low to medium plasticity, medium toughness, medium dry strength, no dilatancy, dry, friable, fine sand | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
8.5-10 ft.
100% Rec. | | 1 | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-LGIA-MW02

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-LGIA-MW02

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 4 | | | | 6 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1884.2 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | | | |
| 1883.2 | 19 | | | | | | | | | | |
| 1882.2 | 20 | | | | | | | | | | |
| 1881.2 | 21 | | | | | | | | | | |
| 1880.2 | 22 | | | | | | | | | | |
| 1879.2 | 23 | | | | | | | | | | |
| 1878.2 | 24 | | | | | | | | | | |
| 1877.2 | 25 | | | | | | | | | | |
| 1876.2 | 26 | | | | | | | | | | |
| 1875.2 | 27 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-LGIA-MW02

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-LGIA-MW02

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 5 OF 6 SHEETS | |
|--------------|--------------|---|--|--|---------------------------------|---|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1875.2 | 27 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | |
| 1874.2 | 28 | | | | | | | | |
| 1873.2 | 29 | | | | | | | | |
| 1872.2 | 30 | | | | | | | | |
| 1871.2 | 31 | | | | | | | | |
| 1870.2 | 32 | | | | | | | | |
| 1869.2 | 33 | | | | | | | | |
| 1868.2 | 34 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
33.5-35 ft.
100% Rec. | | 11

11

12 | | | |
| 1867.2 | 35 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | | |
| 1866.2 | 36 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-LGIA-MW02

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-LGIA-MW02

| PROJECT | | DISTRICT | | ANALYTICAL | | | SHEET | |
|-------------------------------|--------------|--|--|--|---------------------------------|---------------------|----------------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | 6 OF 6 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1866.2 | 36 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | |
| 1865.2 | 37 | (CL) LEAN CLAY (90%): Low to medium
plasticity, medium toughness, medium dry
strength, no dilatancy, slightly moist, fine sand
(10%). (10GY 5/1) | | | | | | |
| 1864.2 | 38 | | | | | | | |
| 1863.2 | 39 | (CL) LEAN CLAY (90%): Low to medium
plasticity, medium toughness, medium dry
strength, no dilatancy, slightly moist, fine sand
(10%). (10GY 5/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
38.5-40 ft.
100% Rec. | | 4


5

6 | | |
| 1862.2 | 40 | | | | | | | |
| 1861.2 | 41 | Bottom of Borehole @ 40.5 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 11-37.2 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | |
| 1860.2 | 42 | | | | | | | |
| 1859.2 | 43 | | | | | | | |
| 1858.2 | 44 | | | | | | | |
| 1857.2 | 45 | | | | | | | |

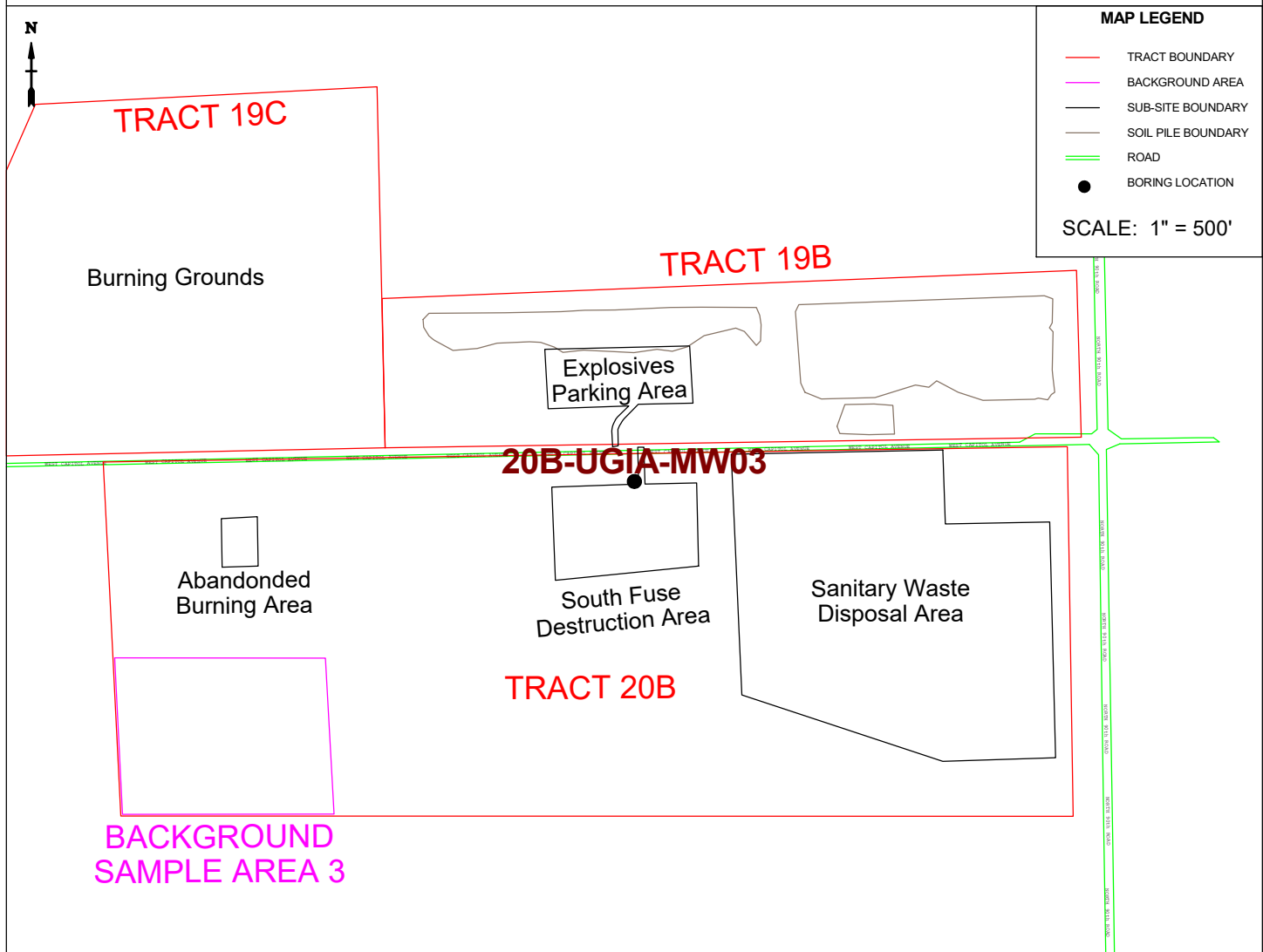
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-LGIA-MW02

| | | | | | |
|--|-------------------|---|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
20B-UGIA-MW03 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
408739.8 North 2049890.3 East | | | |
| | | 9. SURFACE ELEVATION
1901.8' MSL | | | |
| | | 10. DATE STARTED
3/19/2018 | | 11. DATE COMPLETED
3/19/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
12 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
6.45 ft on 4/2/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
20.2 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-UGIA-MW03

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1901.8 | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | HA
0-4 ft. | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1900.8 | 1 | | | | | | |
| 1899.8 | 2 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1898.8 | 3 | | | | | | |
| 1897.8 | 4 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1896.8 | 5 | | | | | | |
| 1895.8 | 6 | | | | | | |
| 1894.8 | 7 | | | | | | |
| 1893.8 | 8 | | | | | | |
| 1892.8 | 9 | *See Next Page | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
8.5-10.5 ft.
100% Rec. | | 1 | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-UGIA-MW03

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-UGIA-MW03

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 3 OF 4 SHEETS | |
|--------------|--------------|---|--|--|---------------------------------|---|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1892.8 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | 2 | | | |
| | | | | | | 2 | | | |
| 1891.8 | 10 | | | | | 3 | | | |
| 1890.8 | 11 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | | | |
| 1889.8 | 12 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | | |
| 1888.8 | 13 | | | | | | | | |
| 1887.8 | 14 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
13.5-15.5 ft.
100% Rec. | | 1 | | | |
| | | | | | | 8 | | | |
| 1886.8 | 15 | | | | | 18 | | | |
| | | | | | | 22 | | | |
| 1885.8 | 16 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | | |
| 1884.8 | 17 | | | | | | | | |
| 1883.8 | 18 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-UGIA-MW03

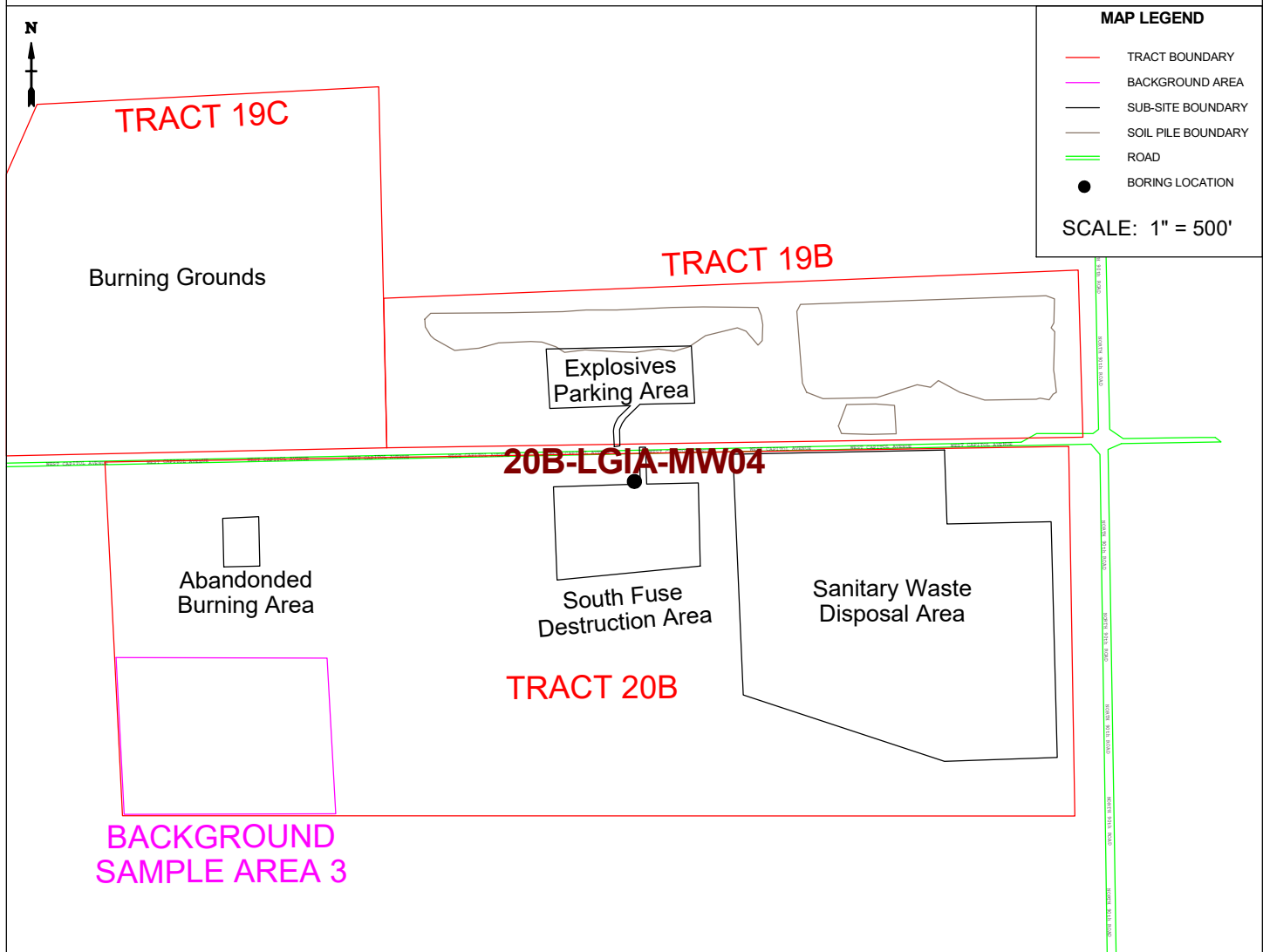
ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

| | | | | | |
|--|-------------------|---|---------------------------------------|---------------------------------|----------------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
20B-LGIA-MW04 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 6 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
408739.4 North 2049885.5 East | | | |
| | | 9. SURFACE ELEVATION
1901.8' MSL | | | |
| | | 10. DATE STARTED
3/18/2018 | | 11. DATE COMPLETED
3/19/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
12 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
6.45 ft on 4/2/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
40.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | | 21. TOTAL CORE RECOVERY
N/A % |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



| | |
|--|---------------------------|
| PROJECT CHAAP Grand Island, Nebraska | HOLE NO 20B-LGIA-MW04 |
|--|---------------------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-LGIA-MW04

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1901.8 | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | HA
0-4 ft. | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1900.8 | 1 | | | | | | |
| 1899.8 | 2 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1898.8 | 3 | | | | | | |
| 1897.8 | 4 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1896.8 | 5 | | | | | | |
| 1895.8 | 6 | | | | | | |
| 1894.8 | 7 | | | | | | |
| 1893.8 | 8 | | | | | | |
| 1892.8 | 9 | *See Next Page | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
8.5-10.5 ft.
100% Rec. | | 1 | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-LGIA-MW04

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-LGIA-MW04

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 3 | | OF | | 6 | | SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1892.8 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | 2 | | | | | |
| | | | | | | 2 | | | | | |
| 1891.8 | 10 | | | | | 3 | | | | | |
| 1890.8 | 11 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | | | | | |
| 1889.8 | 12 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | | | | |
| 1888.8 | 13 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1887.8 | 14 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
13.5-15.5 ft.
100% Rec. | | 1 | | | | | |
| | | | | | | 8 | | | | | |
| 1886.8 | 15 | | | | | 18 | | | | | |
| | | | | | | 22 | | | | | |
| 1885.8 | 16 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | | | | |
| 1884.8 | 17 | | | | | | | | | | |
| 1883.8 | 18 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-LGIA-MW04

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-LGIA-MW04

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 4 | | | | 6 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1883.8 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | | | |
| 1882.8 | 19 | | | | | | | | | | |
| 1881.8 | 20 | | | | | | | | | | |
| 1880.8 | 21 | | | | | | | | | | |
| 1879.8 | 22 | | | | | | | | | | |
| 1878.8 | 23 | | | | | | | | | | |
| 1877.8 | 24 | | | | | | | | | | |
| 1876.8 | 25 | | | | | | | | | | |
| 1875.8 | 26 | | | | | | | | | | |
| 1874.8 | 27 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-LGIA-MW04

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-LGIA-MW04

| PROJECT | | DISTRICT | | SHEET | | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|----------------|--------|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 5 | | 6 | | SHEETS | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| 1874.8 | 27 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | | |
| 1873.8 | 28 | | | | | | | | | |
| 1872.8 | 29 | | | | | | | | | |
| 1871.8 | 30 | | | | | | | | | |
| 1870.8 | 31 | | | | | | | | | |
| 1869.8 | 32 | | | | | | | | | |
| 1868.8 | 33 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
33.5-35.5 ft.
100% Rec. | | 5 | | | | |
| 1867.8 | 34 | | | | | 7 | | | | |
| 1866.8 | 35 | | | | | 12 | | | | |
| | | | | | | 12 | | | | |
| | | *See Next Page | | | | | | | | |
| 1865.8 | 36 | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-LGIA-MW04

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-LGIA-MW04

| PROJECT | CHAAP, Grand Island, Nebraska | DISTRICT | US Army Corps of Engineers - Omaha District | | | | SHEET 6 OF 6 SHEETS |
|--------------|-------------------------------|--|---|--|---------------------------------|---------------------------------|---------------------|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1865.8 | 36 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | |
| 1864.8 | 37 | (CL) LEAN CLAY (90%): Low to medium
plasticity, medium toughness, medium dry
strength, no dilatancy, slightly moist, fine sand
(10%). (10GY 5/1) | | | | | |
| 1863.8 | 38 | | | | | | |
| 1862.8 | 39 | (CL) LEAN CLAY (90%): Low to medium
plasticity, medium toughness, medium dry
strength, no dilatancy, slightly moist, fine sand
(10%). (10GY 5/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
38.5-40.5 ft.
100% Rec. | | 8

12

16

19 | |
| 1861.8 | 40 | | | | | | |
| 1860.8 | 41 | Bottom of Borehole @ 40.5 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 12-36.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | |
| 1859.8 | 42 | | | | | | |
| 1858.8 | 43 | | | | | | |
| 1857.8 | 44 | | | | | | |
| 1856.8 | 45 | | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

20B-LGIA-MW04

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-UGIA-MW05

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|--|
| 1901.3 | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | HA
0-4 ft. | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1900.3 | 1 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1899.3 | 2 | | | | | | |
| 1898.3 | 3 | | | | | | |
| 1897.3 | 4 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
4-5.5 ft. | | | |
| 1896.3 | 5 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
5.5-7 ft. | | | |
| 1895.3 | 6 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
7-8.5 ft. | | | |
| 1894.3 | 7 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
8.5-10 ft. | | | |
| 1893.3 | 8 | | | | | | |
| 1892.3 | 9 | | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

20B-UGIA-MW05

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-UGIA-MW05

| PROJECT | CHAAP | Grand Island, Nebraska | DISTRICT | US Army Corps of Engineers - Omaha District | | | SHEET | 3 | OF | 4 | SHEETS |
|--------------|--------------|--|--|---|---------------------------------|-------------------|----------------|---|----|---|--------|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1892.3 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | | | | | | |
| 1891.3 | 10 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
10-11.5 ft. | | | | | | | |
| 1890.3 | 11 | | | | | | | | | | |
| 1889.3 | 12 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
11.5-13 ft. | | | | | | | |
| 1888.3 | 13 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 7
13-14.5 ft. | | | | | | | |
| 1887.3 | 14 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | | | | |
| 1886.3 | 15 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | | | | |
| 1885.3 | 16 | | | | | | | | | | |
| 1884.3 | 17 | | | | | | | | | | |
| 1883.3 | 18 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-UGIA-MW05

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-UGIA-MW05

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | SHEET 4 OF 4 SHEETS | |
|--------------|--------------|--|--|---|---------------------------------|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1883.3 | 18 | | | | | | | |
| 1882.3 | 19 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, 5%
fines, less than 5% fine gravel increasing to
10% from 18.7-18.9. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 8
18.5-20 ft. | | | | |
| 1881.3 | 20 | | | | | | | |
| | | | | | | | | |
| 1880.3 | 21 | Bottom of Borehole @ 20.2 ft
10 Gallons of Water Lost During Drilling
Heaving Sands 12-20 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | |
| 1879.3 | 22 | | | | | | | |
| 1878.3 | 23 | | | | | | | |
| 1877.3 | 24 | | | | | | | |
| 1876.3 | 25 | | | | | | | |
| 1875.3 | 26 | | | | | | | |
| 1874.3 | 27 | | | | | | | |

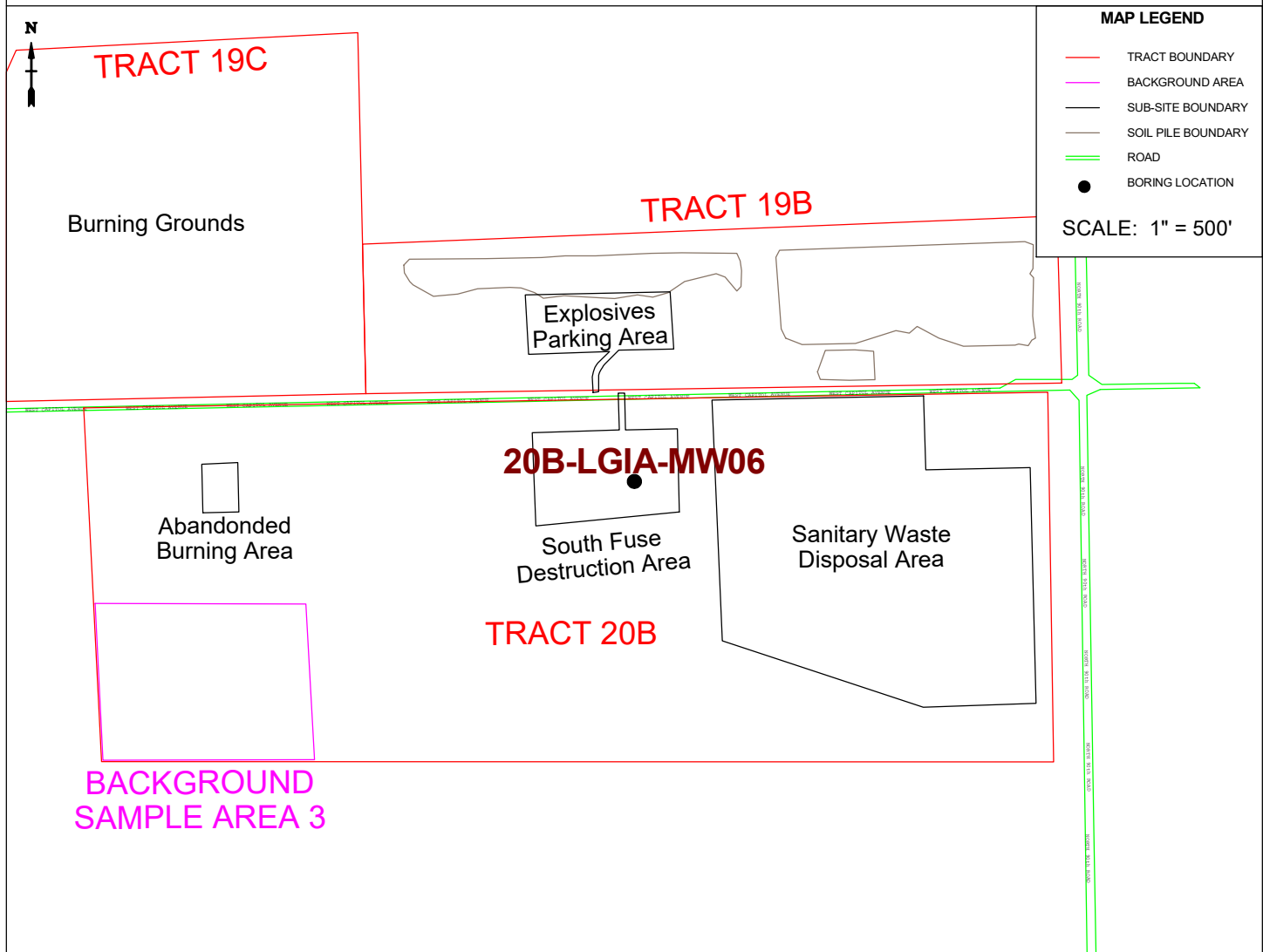
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-UGIA-MW05

| | | | | | |
|--|-------------------|---|---------------------------------------|---------------------------------|------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
20B-LGIA-MW06 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 6 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 61 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
408577.8 North 2049948.4 East | | | |
| | | 9. SURFACE ELEVATION
1901.3' MSL | | | |
| | | 10. DATE STARTED
3/14/2018 | | 11. DATE COMPLETED
3/14/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
12 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
6.02 ft 18 Hrs Post-Install | | | |
| 14. TOTAL DEPTH OF HOLE
40.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
6.02 (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



(CONTINUATION SHEET)


HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-LGIA-MW06

| PROJECT | | CHAAP, Grand Island, Nebraska | DISTRICT | US Army Corps of Engineers - Omaha District | | | | SHEET 2 OF 6 SHEETS | |
|--------------|--------------|--|--|---|--|-------------------|---|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1901.3 | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | HA
0-4 ft. |  | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery | | |
| 1900.3 | 1 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | | | |
| 1899.3 | 2 | | | | | | | | |
| 1898.3 | 3 | | | | | | | | |
| 1897.3 | 4 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
4-5.5 ft. | | | | | |
| 1896.3 | 5 | | | | | | | | |
| 1895.3 | 6 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
5.5-7 ft. | | | | | |
| 1894.3 | 7 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
7-8.5 ft. | | | | | |
| 1893.3 | 8 | | | | | | | | |
| 1892.3 | 9 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
8.5-10 ft. | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

20B-LGIA-MW06

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-LGIA-MW06

| PROJECT | CHAAP, Grand Island, Nebraska | DISTRICT | US Army Corps of Engineers - Omaha District | | | | SHEET 3 OF 6 SHEETS |
|--------------|-------------------------------|--|---|--|---------------------------------|-------------------|---------------------|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1892.3 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | | |
| 1891.3 | 10 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
10-11.5 ft. | | | |
| 1890.3 | 11 | | | | | | |
| 1889.3 | 12 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
11.5-13 ft. | | | |
| 1888.3 | 13 | | | | | | |
| 1887.3 | 14 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 7
13-14.5 ft. | | | |
| 1886.3 | 15 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | |
| 1885.3 | 16 | | | | | | |
| 1884.3 | 17 | | | | | | |
| 1883.3 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-LGIA-MW06

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-LGIA-MW06

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | | | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1874.3 | 27 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | | | |
| 1873.3 | 28 | | | | | | | | | | |
| 1872.3 | 29 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 10
28.5-30 ft. | | | | | | | |
| 1871.3 | 30 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | | | | |
| 1870.3 | 31 | | | | | | | | | | |
| 1869.3 | 32 | | | | | | | | | | |
| 1868.3 | 33 | | | | | | | | | | |
| 1867.3 | 34 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 11
33.5-35 ft. | | | | | | | |
| 1866.3 | 35 | | | | | | | | | | |
| 1865.3 | 36 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-LGIA-MW06

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-LGIA-MW06

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 6 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1865.3 | 36 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | |
| 1864.3 | 37 | | | | | | |
| 1863.3 | 38 | | | | | | |
| 1862.3 | 39 | (CL) LEAN CLAY (90%): Low to medium
plasticity, medium toughness, medium dry
strength, no dilatancy, slightly moist, fine sand
(10%). (10GY 5/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 12
38.5-40 ft. | | | |
| 1861.3 | 40 | | | | | | |
| 1860.3 | 41 | Bottom of Borehole @ 40 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 12-38.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | |
| 1859.3 | 42 | | | | | | |
| 1858.3 | 43 | | | | | | |
| 1857.3 | 44 | | | | | | |
| 1856.3 | 45 | | | | | | |

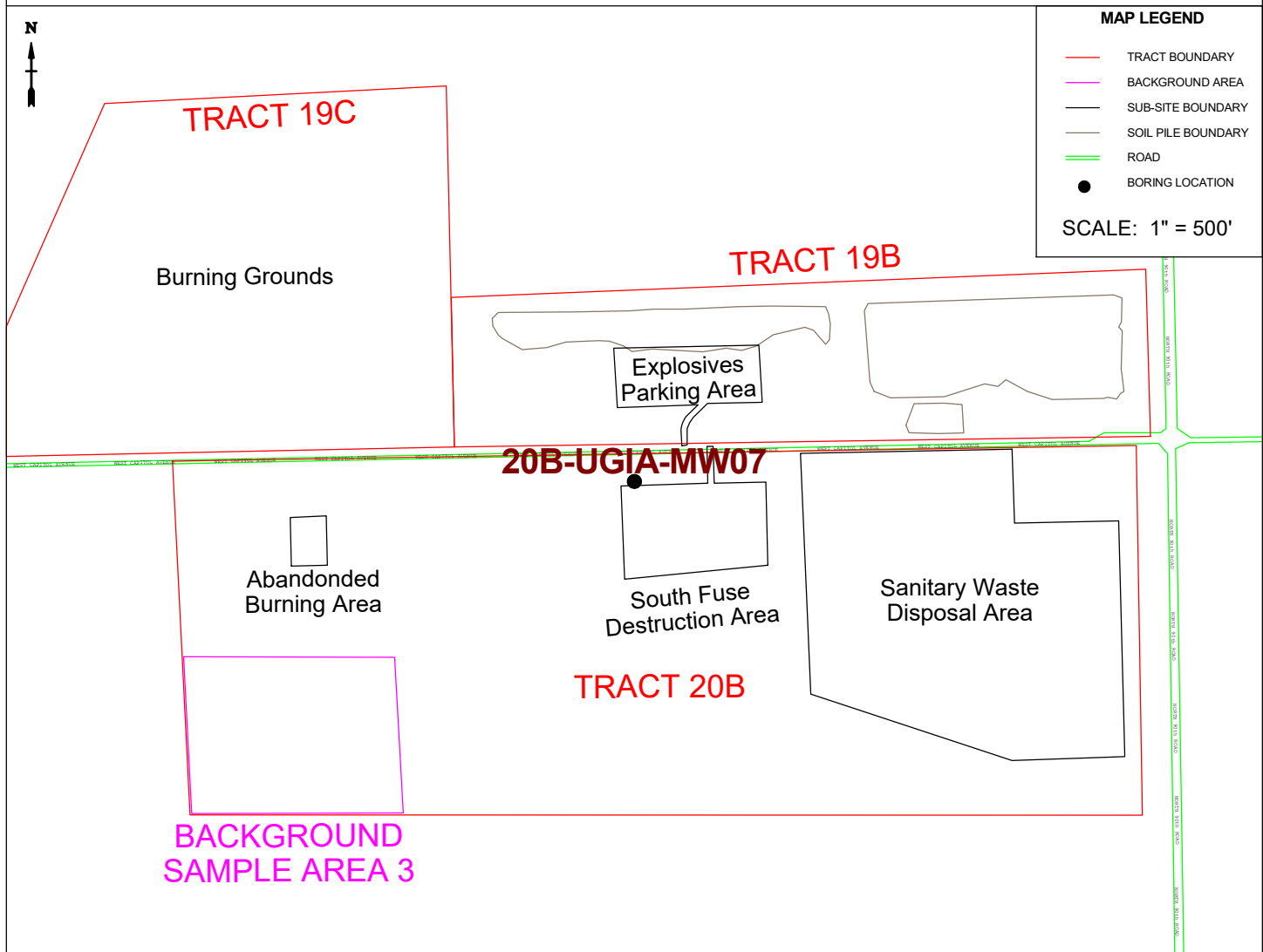
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-LGIA-MW06

| | | | | | |
|--|-------------------|--|---------------------------------------|------------------------------|----------------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
20B-UGIA-MW07 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 61 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
408737.0 North 2049683.8 East | | | |
| | | 9. SURFACE ELEVATION
1902.0' MSL | | | |
| | | 10. DATE STARTED
3/16/2018 | 11. DATE COMPLETED
3/16/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
14.75 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
6.7 ft 18 Hrs Post-Install | | | |
| 14. TOTAL DEPTH OF HOLE
22.7 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
6.7 (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | | 21. TOTAL CORE RECOVERY
N/A % |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-UGIA-MW07

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|--|
| 1902.0 | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | HA
0-4 ft. | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1901.0 | 1 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1900.0 | 2 | | | | | | |
| 1899.0 | 3 | | | | | | |
| 1898.0 | 4 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1897.0 | 5 | | | | | | |
| 1896.0 | 6 | | | | | | |
| 1895.0 | 7 | | | | | | |
| 1894.0 | 8 | | | | | | |
| 1893.0 | 9 | *See Next Page | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
8.5-10 ft. | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-UGIA-MW07

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-UGIA-MW07

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1893.0 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | | |
| 1892.0 | 10 | | | | | | |
| 1891.0 | 11 | | | | | | |
| 1890.0 | 12 | | | | | | |
| 1889.0 | 13 | | | | | | |
| 1888.0 | 14 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
13.5-15 ft. | | | |
| 1887.0 | 15 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | |
| 1886.0 | 16 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | |
| 1885.0 | 17 | | | | | | |
| 1884.0 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

20B-UGIA-MW07

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-UGIA-MW07

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | | SHEET 4 OF 4 SHEETS | |
|--------------|--------------|--|--|---|---------------------------------|-------------------|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1884.0 | 18 | | | | | | | | |
| 1883.0 | 19 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
18.5-20 ft. | | | | | |
| 1882.0 | 20 | | | | | | | | |
| 1881.0 | 21 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | | |
| 1880.0 | 22 | | | | | | | | |
| 1879.0 | 23 | Bottom of Borehole @ 22.7 ft
10 Gallons of Water Lost During Drilling
Heaving Sands14.75-22.7 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | |
| 1878.0 | 24 | | | | | | | | |
| 1877.0 | 25 | | | | | | | | |
| 1876.0 | 26 | | | | | | | | |
| 1875.0 | 27 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-UGIA-MW07

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-LGIA-MW08

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|--|
| 1901.9 | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | HA
0-4 ft. | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1900.9 | 1 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1899.9 | 2 | | | | | | |
| 1898.9 | 3 | | | | | | |
| 1897.9 | 4 | | | | | | |
| 1896.9 | 5 | | | | | | |
| 1895.9 | 6 | | | | | | |
| 1894.9 | 7 | | | | | | |
| 1893.9 | 8 | | | | | | |
| 1892.9 | 9 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
8.5-10 ft. | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-LGIA-MW08

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-LGIA-MW08

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1892.9 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | | |
| 1891.9 | 10 | | | | | | |
| 1890.9 | 11 | | | | | | |
| 1889.9 | 12 | | | | | | |
| 1888.9 | 13 | | | | | | |
| 1887.9 | 14 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
13.5-15 ft. | | | |
| 1886.9 | 15 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | |
| 1885.9 | 16 | | | | | | |
| 1884.9 | 17 | | | | | | |
| 1883.9 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-LGIA-MW08

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-LGIA-MW08

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 4 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1883.9 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
18.5-20 ft. | | | |
| 1882.9 | 19 | | | | | | |
| | | | | | | | |
| 1881.9 | 20 | | | | | | |
| | | | | | | | |
| 1880.9 | 21 | | | | | | |
| | | | | | | | |
| 1879.9 | 22 | | | | | | |
| | | | | | | | |
| 1878.9 | 23 | | | | | | |
| | | | | | | | |
| 1877.9 | 24 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
23.5-25 ft. | | | |
| | | | | | | | |
| 1876.9 | 25 | | | | | | |
| | | | | | | | |
| 1875.9 | 26 | | | | | | |
| | | | | | | | |
| 1874.9 | 27 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-LGIA-MW08

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-LGIA-MW08

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 5 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1874.9 | 27 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | |
| 1873.9 | 28 | | | | | | |
| 1872.9 | 29 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
28.5-30 ft. | | | |
| 1871.9 | 30 | | | | | | |
| 1870.9 | 31 | | | | | | |
| 1869.9 | 32 | | | | | | |
| 1868.9 | 33 | | | | | | |
| 1867.9 | 34 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
33.5-35 ft. | | | |
| 1866.9 | 35 | | | | | | |
| 1865.9 | 36 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-LGIA-MW08

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


20B-LGIA-MW08

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 6 | | 6 | | 6 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1865.9 | 36 | (CL) LEAN CLAY (90%): Low to medium plasticity, medium toughness, medium dry strength, no dilatancy, slightly moist, fine sand (10%). (10GY 5/1) | | | | | | | | | |
| 1864.9 | 37 | | | | | | | | | | |
| 1863.9 | 38 | | | | | | | | | | |
| 1862.9 | 39 | (CL) LEAN CLAY (90%): Low to medium plasticity, medium toughness, medium dry strength, no dilatancy, slightly moist, fine sand (10%). (10GY 5/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 7
38.5-40 ft. | | | | | | | |
| 1861.9 | 40 | Bottom of Borehole @ 40 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 14.75-37 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | | | | |
| 1860.9 | 41 | | | | | | | | | | |
| 1859.9 | 42 | | | | | | | | | | |
| 1858.9 | 43 | | | | | | | | | | |
| 1857.9 | 44 | | | | | | | | | | |
| 1856.9 | 45 | | | | | | | | | | |

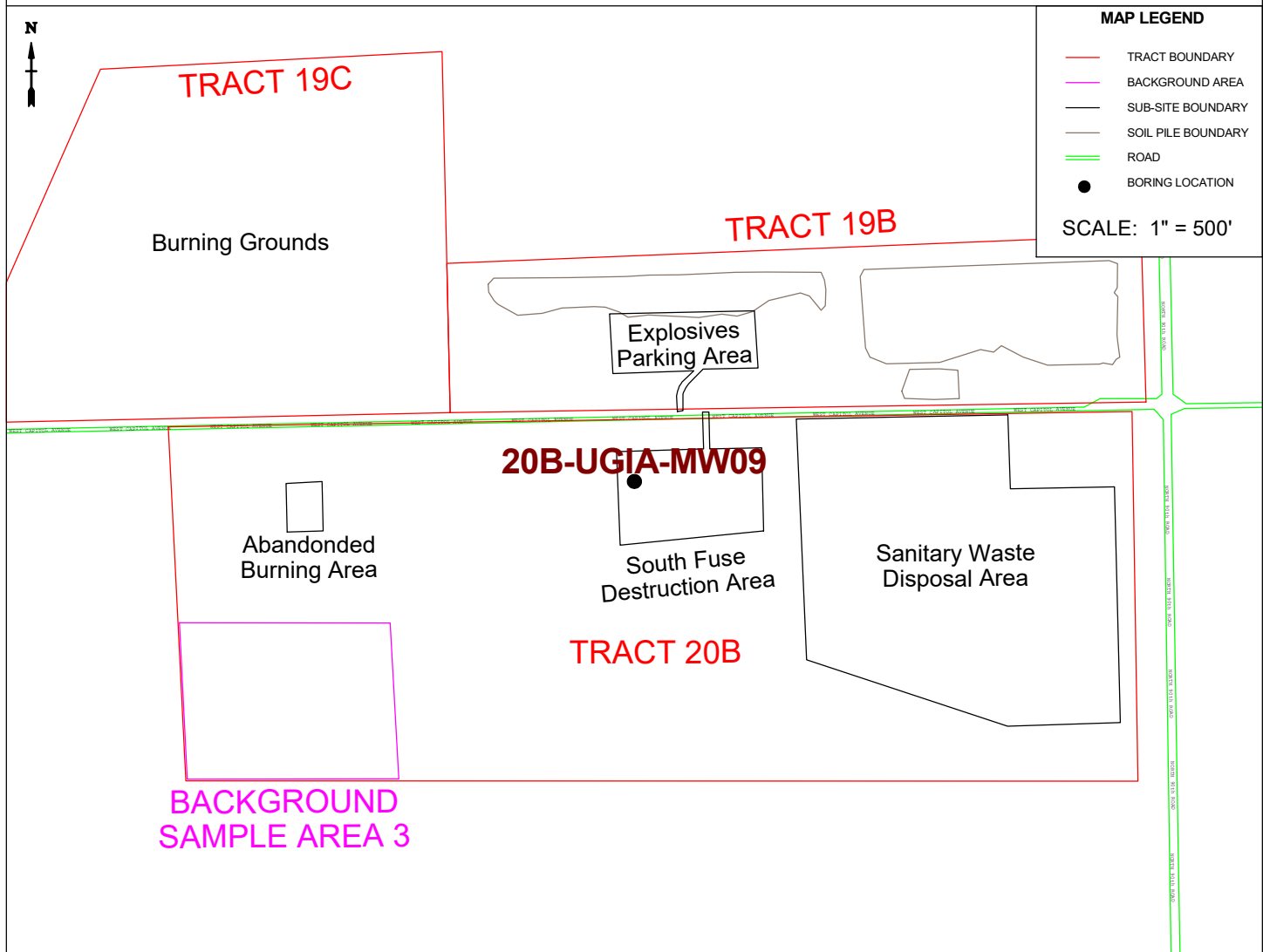
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-LGIA-MW08

| | | | | | |
|--|-------------------|---|---------------------------------------|--|----------------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
20B-UGIA-MW09 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Mobile 57 | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
408634.7 North 2049696.7 East | | | |
| | | 9. SURFACE ELEVATION
1901.3' MSL | | | |
| | | 10. DATE STARTED
7/17/2018 | | 11. DATE COMPLETED
7/17/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
7.4 ft on 7/18/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
20.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
7.21 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | | 21. TOTAL CORE RECOVERY
N/A % |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-UGIA-MW09

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1892.3 | 9 | Same as above becoming Moist. | | | | 2 | |
| 1891.3 | 10 | | | | | 2 | |
| | | | | | | 3 | |
| 1890.3 | 11 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
10.5-12.5 ft.
100% Rec. | | 4 | |
| | | | | | | 7 | |
| 1889.3 | 12 | (CL) LEAN CLAY (95%): Low to medium plasticity, medium toughness, medium dry strength, no dilatancy, moist, fine sand (5%). (10GY 5/1) | | | | 7 | |
| | | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, medium to very coarse grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | 7 | |
| 1888.3 | 13 | | | | | | |
| 1887.3 | 14 | | | | | | |
| 1886.3 | 15 | | | | | | |
| 1885.3 | 16 | | | | | | |
| 1884.3 | 17 | | | | | | |
| 1883.3 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-UGIA-MW09

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-UGIA-MW09

| PROJECT | | DISTRICT | | ANALYTICAL | | | SHEET | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|----------------|--|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | 4 | | 4 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | | |
| 1883.3 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
18-20 ft.
100% Rec. | | 7 | | | | | | |
| | 6 | | | | | | | | | | | |
| 1882.3 | 19 | | | | | 8 | | | | | | |
| | | | | | | 7 | | | | | | |
| 1881.3 | 20 | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 1880.3 | 21 | Bottom of Borehole @ 20.5 ft
10 Gallons of Water Lost During Drilling
Heaving Sands12-20.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | | | | |
| 1879.3 | 22 | | | | | | | | | | | |
| 1878.3 | 23 | | | | | | | | | | | |
| 1877.3 | 24 | | | | | | | | | | | |
| 1876.3 | 25 | | | | | | | | | | | |
| 1875.3 | 26 | | | | | | | | | | | |
| 1874.3 | 27 | | | | | | | | | | | |

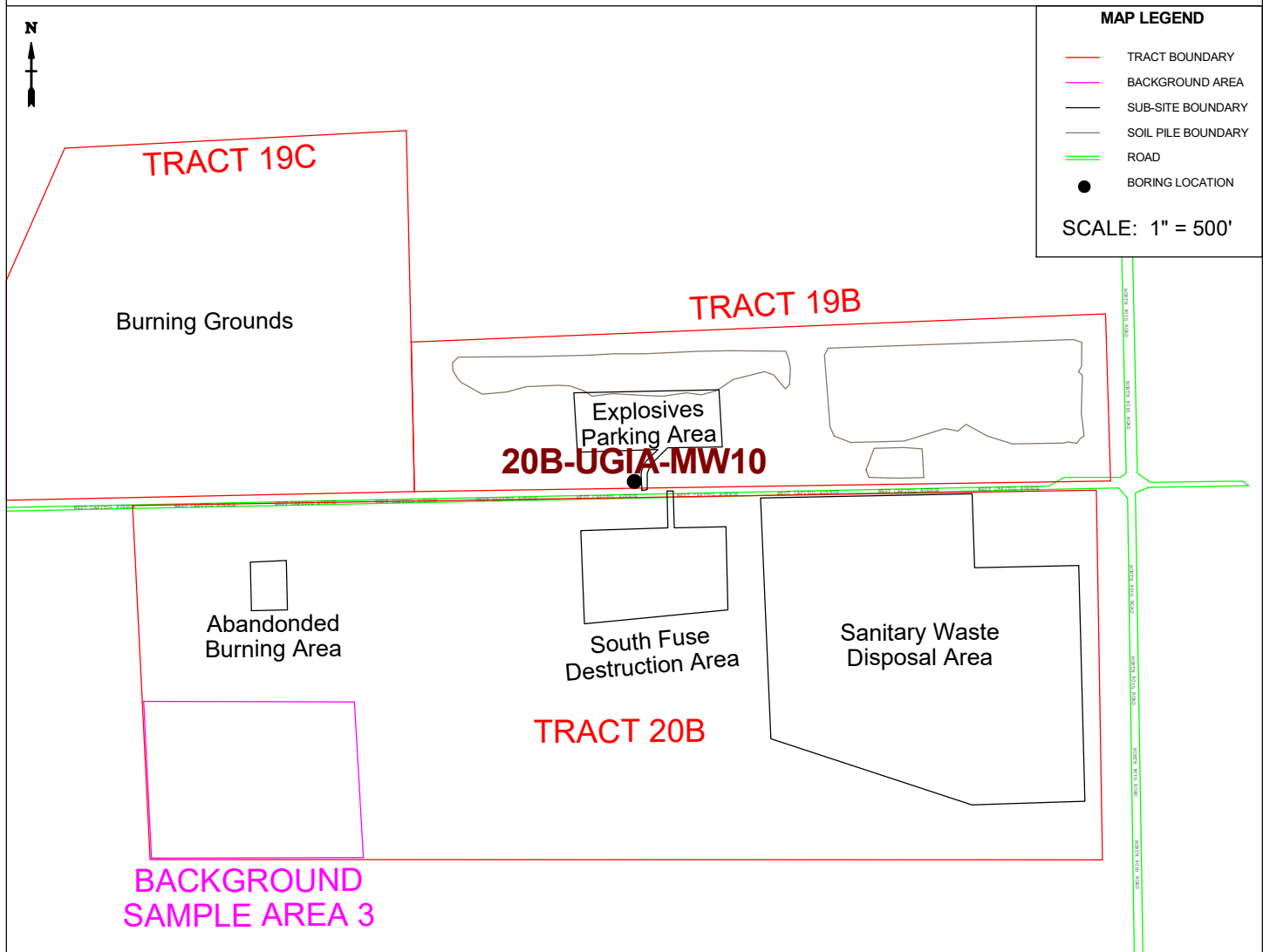
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-UGIA-MW09

| | | | | | |
|--|-------------------|--|---------------------------------------|----------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
20B-UGIA-MW10 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Mobile 57 | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
408870.1 North 2049803.1 East | | | |
| | | 9. SURFACE ELEVATION
1901.8' MSL | | | |
| | | 10. DATE STARTED
7/16/2018 | | 11. DATE COMPLETED
7/16/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
7.79 ft on 7/17/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
20.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
7.21 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



| | |
|--|--------------------------|
| PROJECT CHAAP Grand Island, Nebraska | HOLE NO 20B-UGIA-MW10 |
|--|--------------------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-UGIA-MW10

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 2 OF 4 SHEETS | |
|--------------|--------------|--|---|--|--|---|-------------------|---|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1901.8 | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery | |
| 1900.8 | 1 | | | | | | | | |
| 1899.8 | 2 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3.5-5.5 ft.
100% Rec. | | 4 | | |
| 1898.8 | 3 | | 3 | | | | | | |
| 1897.8 | 4 | | | | | | 3 | | |
| 1896.8 | 5 | | | | | | 3 | | |
| 1895.8 | 6 | | | | | | | | |
| 1894.8 | 7 | | | | | | | | |
| 1893.8 | 8 | | | | | | | | |
| 1892.8 | 9 | Same as above becoming Moist to Wet. | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
8.5-10.5 ft.
100% Rec. | | 2 | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-UGIA-MW10

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-UGIA-MW10

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1892.8 | 9 | Same as above becoming Moist to Wet.
(continued) | | | | 2 | |
| | | | | | | 1 | |
| 1891.8 | 10 | | | | | 2 | |
| | | | | | | 3 | |
| 1890.8 | 11 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
10.5-12.5 ft.
100% Rec. | | 3 | |
| | | | | | | 4 | |
| 1889.8 | 12 | (CL) LEAN CLAY (88%): Low to medium
plasticity, high dry strength, medium
toughness, 10% fine sand, no dilatancy. (10Y
3/1) | | | | 7 | |
| | | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1) | | | | | |
| 1888.8 | 13 | | | | | | |
| | | | | | | | |
| 1887.8 | 14 | | | | | | |
| | | | | | | | |
| 1886.8 | 15 | | | | | | |
| | | | | | | | |
| 1885.8 | 16 | | | | | | |
| | | | | | | | |
| 1884.8 | 17 | | | | | | |
| | | | | | | | |
| 1883.8 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-UGIA-MW10

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-UGIA-MW10

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 4 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1883.8 | 18 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
18-20 ft.
100% Rec. | | 7 | |
| | | | | | | 8 | |
| | | | | | | 9 | |
| 1882.8 | 19 | | | | | 9 | |
| | | | | | | | |
| 1881.8 | 20 | | | | | | |
| | | | | | | | |
| 1880.8 | 21 | Bottom of Borehole @ 20.5 ft
10 Gallons of Water Lost During Drilling
Heaving Sands 12-20.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | |
| | | | | | | | |
| 1879.8 | 22 | | | | | | |
| | | | | | | | |
| 1878.8 | 23 | | | | | | |
| | | | | | | | |
| 1877.8 | 24 | | | | | | |
| | | | | | | | |
| 1876.8 | 25 | | | | | | |
| | | | | | | | |
| 1875.8 | 26 | | | | | | |
| | | | | | | | |
| 1874.8 | 27 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-UGIA-MW10

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-UGIA-MW11

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|--|
| 1901.6 | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1900.6 | 1 | | | | | | |
| 1899.6 | 2 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3.5-5.5 ft.
100% Rec. | | 4 | |
| 1898.6 | 3 | | | | | 2 | |
| 1897.6 | 4 | | | | | 2 | |
| 1896.6 | 5 | | | | | 4 | |
| 1895.6 | 6 | | | | | | |
| 1894.6 | 7 | | | | | | |
| 1893.6 | 8 | | | | | | |
| 1892.6 | 9 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
8.5-10.5 ft.
100% Rec. | | 2 | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-UGIA-MW11

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-UGIA-MW11

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1892.6 | 9 | Same as above becoming Moist to Wet. | | | | 1 | |
| | | | | | | 2 | |
| 1891.6 | 10 | | | | | 1 | |
| | | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy. (10Y 3/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
10.5-12.5 ft.
100% Rec. | | 2 | |
| 1890.6 | 11 | | | | | 2 | |
| | | | | | | 5 | |
| 1889.6 | 12 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | 5 | |
| | | | | | | | |
| 1888.6 | 13 | | | | | | |
| | | | | | | | |
| 1887.6 | 14 | | | | | | |
| | | | | | | | |
| 1886.6 | 15 | | | | | | |
| | | | | | | | |
| 1885.6 | 16 | | | | | | |
| | | | | | | | |
| 1884.6 | 17 | | | | | | |
| | | | | | | | |
| 1883.6 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 20B-UGIA-MW11

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

20B-UGIA-MW11

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | | SHEET 4 OF 4 SHEETS | |
|--------------|--------------|---|--|---|---------------------------------|-------------------|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1883.6 | 18 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
18-20 ft.
100% Rec. | | 6 | | | |
| | | | | | | 6 | | | |
| 1882.6 | 19 | | | | | 7 | | | |
| | | | | | | 6 | | | |
| 1881.6 | 20 | | | | | | | | |
| | | Bottom of Borehole @ 20 ft
10 Gallons of Water Lost During Drilling
Heaving Sands11.5-20 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | |
| 1880.6 | 21 | | | | | | | | |
| | | | | | | | | | |
| 1879.6 | 22 | | | | | | | | |
| | | | | | | | | | |
| 1878.6 | 23 | | | | | | | | |
| | | | | | | | | | |
| 1877.6 | 24 | | | | | | | | |
| | | | | | | | | | |
| 1876.6 | 25 | | | | | | | | |
| | | | | | | | | | |
| 1875.6 | 26 | | | | | | | | |
| | | | | | | | | | |
| 1874.6 | 27 | | | | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

20B-UGIA-MW11

21B-Backstop Berm Boring Logs
Soil Samples

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| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>21B-BB-SB01</i> | |
|--|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSI Engineering</i> | | SHEET
<i>1</i> OF <i>2</i> SHEETS | |
| 3. PROJECT
<i>CHAAP RIES</i> | | | | 4. LOCATION
<i>Grand Island, NE - CHAAP</i> | | | |
| 5. NAME OF DRILLER
<i>M. Nold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>G600 Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>G600 Geoprobe
4"x2" Dual Tube Sampler</i> | | | | 8. HOLE LOCATION
<i>BB-SB01</i> | | | |
| | | | | 9. SURFACE ELEVATION
— | | | |
| | | | | 10. DATE STARTED
<i>5.15.18</i> | | 11. DATE COMPLETED
<i>5.15.18</i> | |
| 12. OVERBURDEN THICKNESS
— | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | |
| 14. TOTAL DEPTH OF HOLE
<i>4'</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | |
| 18. GEOTECHNICAL SAMPLES
<i>X</i> | | DISTURBED
— | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>X</i> | | VOC
— | | METALS
<i>X</i> | | OTHER (SPECIFY)
<i>Explosives</i> | |
| 22. DISPOSITION OF HOLE
<i>Lithology Sampling</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL
— | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepeth</i> | |
| <div style="display: flex; justify-content: space-between;"> LOCATION SKETCH/COMMENTS SCALE: <i>Not to Scale</i> </div> <div style="text-align: center; margin-top: 20px;"> </div> | | | | | | | |
| PROJECT
<i>CHAAP RIES</i> | | | | | | HOLE NO
<i>21B-BB-SB01</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | HOLE NUMBER
21B-BB-SB01 | |
|--|--------------|---|-------------------------------|--|---------------------------------|-------------------------------|------------------------------|
| PROJECT
CHAAP RIFS | | | INSPECTOR
A. Hedgepatk | | | SHEET 2 OF 2 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PIU
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
| | 0 | Topsoil - moist
L. plastic to nor
v. DK Brown | 0.0 | | | | Collect BB-5501
@ 858 ffd |
| | 1 | | | | | | |
| | 2 | | | | 1 | 75% | |
| | 3 | Same as above -
Dry | 0.0 | | | | Collect BB-5501
@ 900 |
| | 4 | End of boring at 4' | | | | | |
| | 5 | | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO 21B-BB-SB01

| HTRW DRILLING LOG | | | DISTRICT
USACE - Omaha | | HOLE NUMBER
21B-BB-SB02 | | |
|---|--|------------------------|---|-------------------------|--------------------------------------|---|----------------------------|
| 1. COMPANY NAME
HydroGeoLogic, Inc. | | | 2. DRILLING CONTRACTOR
GSI Engineering | | | SHEET
1 OF 2 | |
| 3. PROJECT
CHAAP RIFS | | | 4. LOCATION
Grand Island, NE - CHAAP | | | | |
| 5. NAME OF DRILLER
M. Wold | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
G600 Geoprobe | | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
G600 Geoprobe
4"x2" Dual Tube Sampler | | | 8. HOLE LOCATION
BB-SB02 | | | | |
| | | | 9. SURFACE ELEVATION
— | | | | |
| | | | 10. DATE STARTED
5.15.18 | | 11. DATE COMPLETED
5.15.18 | | |
| 12. OVERBURDEN THICKNESS
— | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | | |
| 14. TOTAL DEPTH OF HOLE
4' | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | | |
| 18. GEOTECHNICAL SAMPLES
X | | DISTURBED
— | | UNDISTURBED
X | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
2 | | VOC
— | | METALS
+ | | OTHER (SPECIFY)
Expl. | |
| 22. DISPOSITION OF HOLE
Lithology Sampling | | BACKFILLED
X | | MONITORING WELL
— | | 23. SIGNATURE OF INSPECTOR
A. Hedgepeth | |
| LOCATION SKETCH/COMMENTS | | | | | | | SCALE: Not to Scale |
| | | | | | | | |
| PROJECT
CHAAP RIFS | | | | | | HOLE NO
21B-BB-SB02 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|--|------------------------|--|---------------------------------|-------------------------------|--------------------------|
| PROJECT | | | INSPECTOR | | | SHEET | |
| CHAAP RIFS | | | A. Hedgepath | | | 2 OF 2 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | RECOVERY
BLOW COUNT
(g) | REMARKS
(h) |
| 905
5.15.18 | 0 | Topsoil | PID
0.0 | | | | Collect BB-5802
@ 910 |
| | 1 | | | | | | |
| | 2 | | | | | | |
| | 3 | Same as above, moist
L. to non plastic,
non cohesive, soft | | | | | Collect BB-5802
@ 915 |
| 5.15.18
915 | 4 | End of Boring at 4' | | | | | |
| | 5 | | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO 21B-BB-5802

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>21B-BB-SB03</i> | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSI Engineering</i> | | SHEET
<i>1</i> OF <i>2</i> SHEETS | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Grand Island, NE - CHAAP</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>G600 Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>G600 Geoprobe
4"x2" Dual Tube Sampler</i> | | | | 8. HOLE LOCATION
<i>BB-SB03</i> | | | |
| | | | | 9. SURFACE ELEVATION
— | | | |
| | | | | 10. DATE STARTED
<i>5.15.18</i> | | 11. DATE COMPLETED
<i>5.15.18</i> | |
| 12. OVERBURDEN THICKNESS
— | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | |
| 14. TOTAL DEPTH OF HOLE
<i>4'</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | |
| 18. GEOTECHNICAL SAMPLES
<i>X</i> | | DISTURBED
— | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>2</i> | | VOC
— | | METALS
<i>2</i> | | OTHER (SPECIFY)
<i>Expl.</i> | |
| 22. DISPOSITION OF HOLE
<i>Lithology Sampling</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL
— | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepeth</i> | |
| LOCATION SKETCH/COMMENTS | | | | SCALE: <i>Not to Scale</i> | | | |
| | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>21B-BB-SB03</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | HOLE NUMBER
21B- BB -5B03 | |
|--|--------------|---|-------------------------------|--|---------------------------------|---|--------------------------|
| PROJECT
CHAAP RIFS | | | INSPECTOR
A. Hedgepath | | | SHEET 2 OF 2 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PIB
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
| 930
5.15.18 | 0 | Topsoil - V. Dk Brown,
Soft, L to non plastic,
<u>moist</u> | 0.0 | | | | Collect BB-5B03
@ 935 |
| | 1 | | | | | | |
| | 2 | | | | 1 | 75% | |
| | 3 | Same as above, Dry,
non cohesive | 0.0 | | | | Collect BB-5B03
@ 940 |
| 935
5.15.18 | 4 | End of boring at 4' | | | | | |
| | 5 | | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO 21B-~~BB~~-5B03

| HTRW DRILLING LOG | | | | DISTRICT
USACE - Omaha | | HOLE NUMBER
21B-BB-SB04 | |
|--|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
HydroGeoLogic, Inc. | | | | 2. DRILLING CONTRACTOR
GSE Engineering | | SHEET
1 OF 2 SHEETS | |
| 3. PROJECT
CHAAP RIES | | | | 4. LOCATION
Grand Island, NE - CHAAP | | | |
| 5. NAME OF DRILLER
m. wold | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
G600 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
G600 Geoprobe
4"x2" Dual Tube Sampler | | | | 8. HOLE LOCATION
BB-SB04 | | | |
| | | | | 9. SURFACE ELEVATION
— | | | |
| | | | | 10. DATE STARTED
5.15.18 | | 11. DATE COMPLETED
5.15.18 | |
| 12. OVERBURDEN THICKNESS
— | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | |
| 14. TOTAL DEPTH OF HOLE
4 | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | |
| 18. GEOTECHNICAL SAMPLES
X | | DISTURBED
— | | UNDISTURBED
X | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
X | | VOC
— | | METALS
X | | OTHER (SPECIFY)
Geol. | |
| 22. DISPOSITION OF HOLE
Lithology / sampling | | BACKFILLED
X | | MONITORING WELL
— | | 23. SIGNATURE OF INSPECTOR
A. Hedgepeth | |
| | | | | | | | |
| <div style="display: flex; justify-content: space-between;"> LOCATION SKETCH/COMMENTS SCALE: Not to Scale </div> <div style="text-align: center; margin-top: 20px;"> </div> | | | | | | | |
| PROJECT
CHAAP RIES | | | | | | HOLE NO
21B-BB-SB04 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|------------------------|--|---------------------------------|-------------------------------|--------------------------|
| PROJECT | | | INSPECTOR | | | SHEET | |
| CHAAP RIFS | | | A. Hedgepath | | | 218-BB-SB04 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | RECOVERY
BLOW COUNT
(g) | REMARKS
(h) |
| 920
5-15-18 | 0 | Topsoil - V. DK Brown, low
to non cohesive, Dry to moist
m. stiff | PID
0.0 | | | | Collect BB-SB04
@ 925 |
| | 1 | | | | | | |
| | 2 | | | | 1 | 75% | |
| | 3 | Same as above - Dry
non cohesive | 0.0 | | | | Collect BB-SB04
@ 930 |
| 925
5-15-18 | 4 | End of boring at 4' | | | | | |
| | 5 | | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO 218-BB-SB04

| HTRW DRILLING LOG | | | | DISTRICT
USACE - Omaha | | HOLE NUMBER
21B-BB-SB05 | |
|--|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
HydroGeoLogic, Inc. | | | | 2. DRILLING CONTRACTOR
GSE Engineering | | SHEET
1 OF 2 SHEETS | |
| 3. PROJECT
CHAAP RIFS | | | | 4. LOCATION
Grand Island, NE - CHAAP | | | |
| 5. NAME OF DRILLER
m. wold | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
G600 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
G600 Geoprobe
4"x2" Dual Tube Sampler | | | | 8. HOLE LOCATION
BB-SB05 | | | |
| | | | | 9. SURFACE ELEVATION
— | | | |
| | | | | 10. DATE STARTED
5.15.18 | | 11. DATE COMPLETED
5.15.18 | |
| 12. OVERBURDEN THICKNESS
— | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | |
| 14. TOTAL DEPTH OF HOLE
4' | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | |
| 18. GEOTECHNICAL SAMPLES
X | | DISTURBED
— | | UNDISTURBED
X | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
2 | | VOC
— | | METALS
2 | | OTHER (SPECIFY)
Expl. | |
| | | | | | | 21. TOTAL CORE
— % | |
| 22. DISPOSITION OF HOLE
Lithology Sampling | | BACKFILLED
X | | MONITORING WELL
— | | 23. SIGNATURE OF INSPECTOR
A. Hedgepath | |
| <div style="display: flex; justify-content: space-between;"> <div>LOCATION SKETCH/COMMENTS</div> <div>SCALE: Not to Scale</div> </div> <div style="text-align: center; margin-top: 20px;"> </div> | | | | | | | |
| PROJECT
CHAAP RIFS | | | | | | HOLE NO
21B-BB-SB05 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|-------------------------------|---|---------------------------------|-------------------------------|--------------------------|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIFS | | | A. Hedgepeth | | | 218-BB-SB05
2 OF 2 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PIU
(d) | GEO TECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | RECORDED
BLOW COUNT
(g) | REMARKS
(h) |
| 5.15.18
915 | 0 | Topsoil - moist, non plastic
v. OK Brown | 0.0 | | | | collect BB-SB05
@ 920 |
| | 1 | | | | | | |
| | 2 | | | | | | |
| | 3 | | | | | | |
| | 3 | Same as above, dry
non cohesive | 0.1 | | | | collect BB-SB05
@ 925 |
| 5.15.18
920 | 4 | End of Boring at 4' | | | | | |
| | 5 | | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO 218-BB-SB05

| HTRW DRILLING LOG | | | | DISTRICT
USACE - Omaha | | HOLE NUMBER
21B- BB-SB06 | |
|--|--|------------------------|--|---|--|--|--|
| 1. COMPANY NAME
HydroGeoLogic, Inc. | | | | 2. DRILLING CONTRACTOR
GSZ Engineering | | SHEET
1 OF 2 SHEETS | |
| 3. PROJECT
CHAAP RIES | | | | 4. LOCATION
Grand Island, NE - CHAAP | | | |
| 5. NAME OF DRILLER
M. Wold | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
G600 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
G600 Geoprobe
4"x2" Dual Tube Sampler | | | | 8. HOLE LOCATION
RB-SB06 | | | |
| | | | | 9. SURFACE ELEVATION
— | | | |
| | | | | 10. DATE STARTED
5.15.18 | | 11. DATE COMPLETED
5.15.18 | |
| 12. OVERBURDEN THICKNESS
— | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | |
| 14. TOTAL DEPTH OF HOLE
4' | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | |
| 18. GEOTECHNICAL SAMPLES
X | | DISTURBED
— | | UNDISTURBED
X | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
X | | VOC
— | | METALS
X | | OTHER (SPECIFY)
Expl. | |
| | | | | OTHER (SPECIFY)
SPLP | | 21. TOTAL CORE
— % | |
| 22. DISPOSITION OF HOLE
Lithology Sampling | | BACKFILLED
X | | MONITORING WELL
— | | 23. SIGNATURE OF INSPECTOR
A. Hedgespeth | |
| <div style="display: flex; justify-content: space-between;"> LOCATION SKETCH/COMMENTS SCALE: Not to Scale </div> <div style="text-align: center; margin-top: 20px;"> </div> | | | | | | | |
| PROJECT
CHAAP RIES | | | | | | HOLE NO
21B- BB-SB06 | |


| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
21B-BB-SB06 |
|--|--------------|---|-------------------------------|---|---------------------------------|--------------------------------|--|
| PROJECT
CHAAP RIFS | | | INSPECTOR
A. Hedgepath | | | SHEET
2 OF 2 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PIU
(d) | GEO TECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | RECOVERED
BLOW COUNT
(g) | REMARKS
(h) |
| 5.15.18
945 | 0 | Topsoil - moist, nonplastic,
soft, V. DK Brown | 0.0 | | | | Collect BB-SB06
@ 950
+ FD |
| | 1 | | | | | | |
| | 2 | Lean clay w Tr. F.
Sand, light gray, stiff,
L. plastic, moist | | CL | | 75% | |
| | 3 | Same as above | 0.0 | | | | Collect BB-SB06
@ 955
+ m s/m sd |
| 950
5.15.18 | 4 | End of Boring at 4' | | | | | |
| | 5 | | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |

PROJECT
CHAAP RIFS

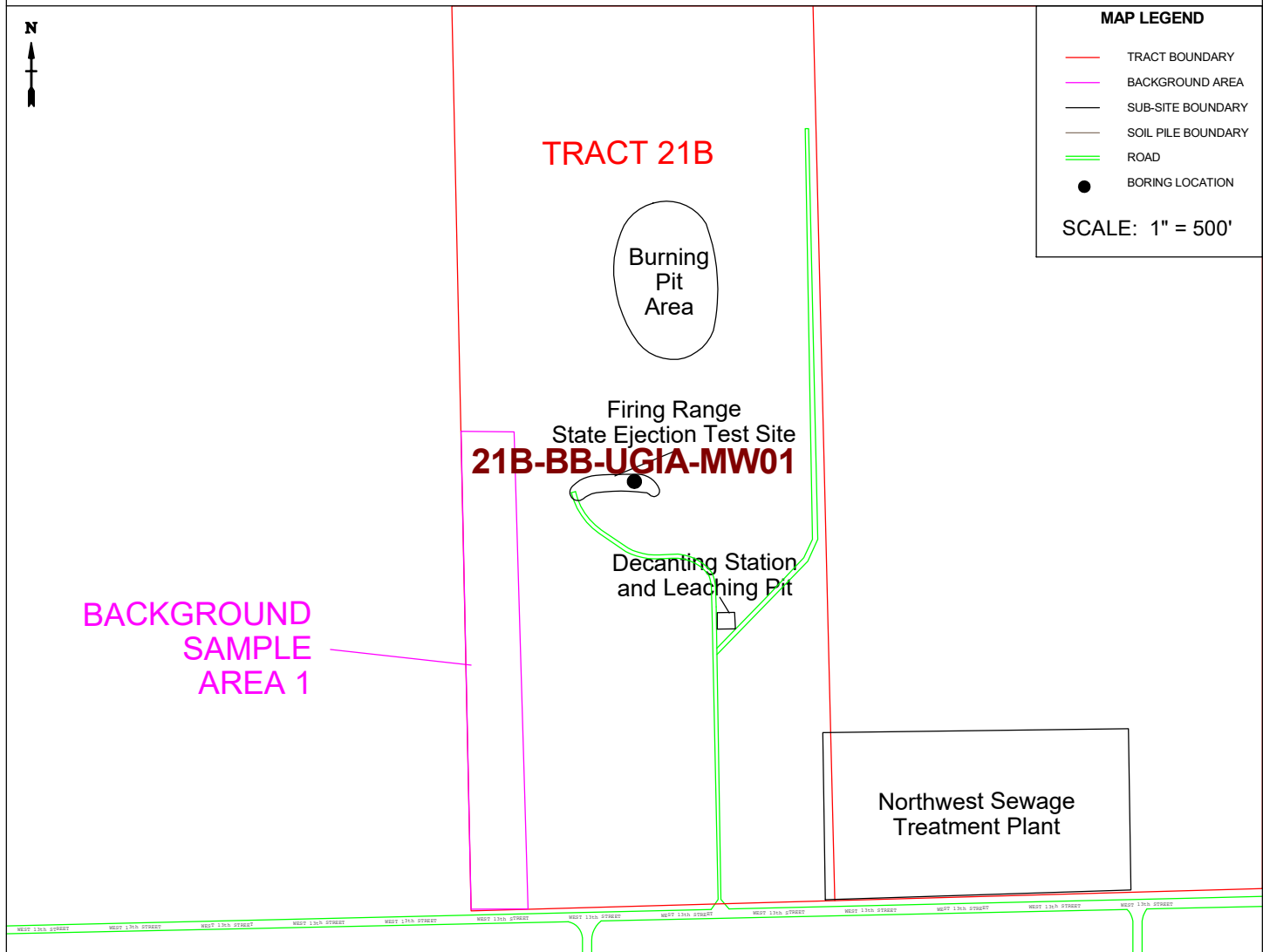
HOLE NO
21B-BB-SB06

**21B-Backstop Berm Boring Logs
Monitoring Wells**

| | | | | | |
|--|-------------------|---|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-BB-UGIA-MW01 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
404790.2 North 2048506.6 East | | | |
| | | 9. SURFACE ELEVATION
1913.9' MSL | | | |
| | | 10. DATE STARTED
5/16/2018 | | 11. DATE COMPLETED
5/16/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
17 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
15.84 ft on 5/17/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
25.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
16.72 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



| | |
|---|-------------------------------|
| PROJECT CHAAP Grand Island, Nebraska | HOLE NO 21B-BB-UGIA-MW01 |
|---|-------------------------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BB-UGIA-MW01

| PROJECT | | CHAAP, Grand Island, Nebraska | DISTRICT | US Army Corps of Engineers - Omaha District | | | | SHEET 2 OF 4 SHEETS | |
|--------------|--------------|---|--|---|---------------------------------|-------------------|---|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1913.9 | 0 | (ML) CLAYEY SILT: Stiff, moist, dark brown, low plasticity, trace small cream veins. (2.5Y 3/1) | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery | | |
| 1912.9 | 1 | | | | | | | | |
| 1911.9 | 2 | | | | | | | | |
| 1910.9 | 3 | | | | | | | | |
| 1909.9 | 4 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3.5-5.5 ft.
75% Rec. | 3 | | | | |
| | | | | | 8 | | | | |
| | | | | | 11 | | | | |
| 1908.9 | 5 | | | | | 8 | | | |
| 1907.9 | 6 | | | | | | | | |
| 1906.9 | 7 | | | | | | | | |
| 1905.9 | 8 | | | | | | | | |
| 1904.9 | 9 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
8.5-10.5 ft.
100% Rec. | 2 | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

21B-BB-UGIA-MW01

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BB-UGIA-MW01

| PROJECT | | DISTRICT | | SHEET | | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|----------------|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 3 | | | 4 | | SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| 1904.9 | 9 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained mottling. (10y 3/1) | | | | 3 | | | | |
| | | | | | | 3 | | | | |
| 1903.9 | 10 | | | | | 5 | | | | |
| | | | | | | | | | | |
| 1902.9 | 11 | | | | | | | | | |
| | | | | | | | | | | |
| 1901.9 | 12 | | | | | | | | | |
| | | | | | | | | | | |
| 1900.9 | 13 | | | | | | | | | |
| | | | | | | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
13.5-15.5 ft.
100% Rec. | | 1 | | | | |
| 1899.9 | 14 | | | | | 2 | | | | |
| | | | | | | 2 | | | | |
| 1898.9 | 15 | | | | | 3 | | | | |
| | | | | | | | | | | |
| 1897.9 | 16 | | | | | | | | | |
| | | | | | | | | | | |
| 1896.9 | 17 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | | | | | |
| 1895.9 | 18 | | | | | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

21B-BB-UGIA-MW01

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BB-UGIA-MW01

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 4 OF 4 SHEETS | |
|--------------|--------------|--|--|--|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1895.9 | 18 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | | | | | | |
| | | | | | | | | | |
| 1894.9 | 19 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
18.5-20.5 ft.
100% Rec. | | 3 | | |
| | | | | | | | 5 | | |
| | | | | | | | 7 | | |
| 1893.9 | 20 | | | | | | 9 | | |
| | | | | | | | | | |
| 1892.9 | 21 | | | | | | | | |
| | | | | | | | | | |
| 1891.9 | 22 | | | | | | | | |
| | | | | | | | | | |
| 1890.9 | 23 | | | | | | | | |
| | | | | | | | | | |
| 1889.9 | 24 | | | | | | | | |
| | | | | | | | | | |
| 1888.9 | 25 | | | | | | | | |
| | | | | | | | | | |
| 1887.9 | 26 | Bottom of Borehole @ 25.5 ft
10 Gallons of Water Lost During Drilling
Heaving Sands 17-25.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | |
| 1886.9 | 27 | | | | | | | | |

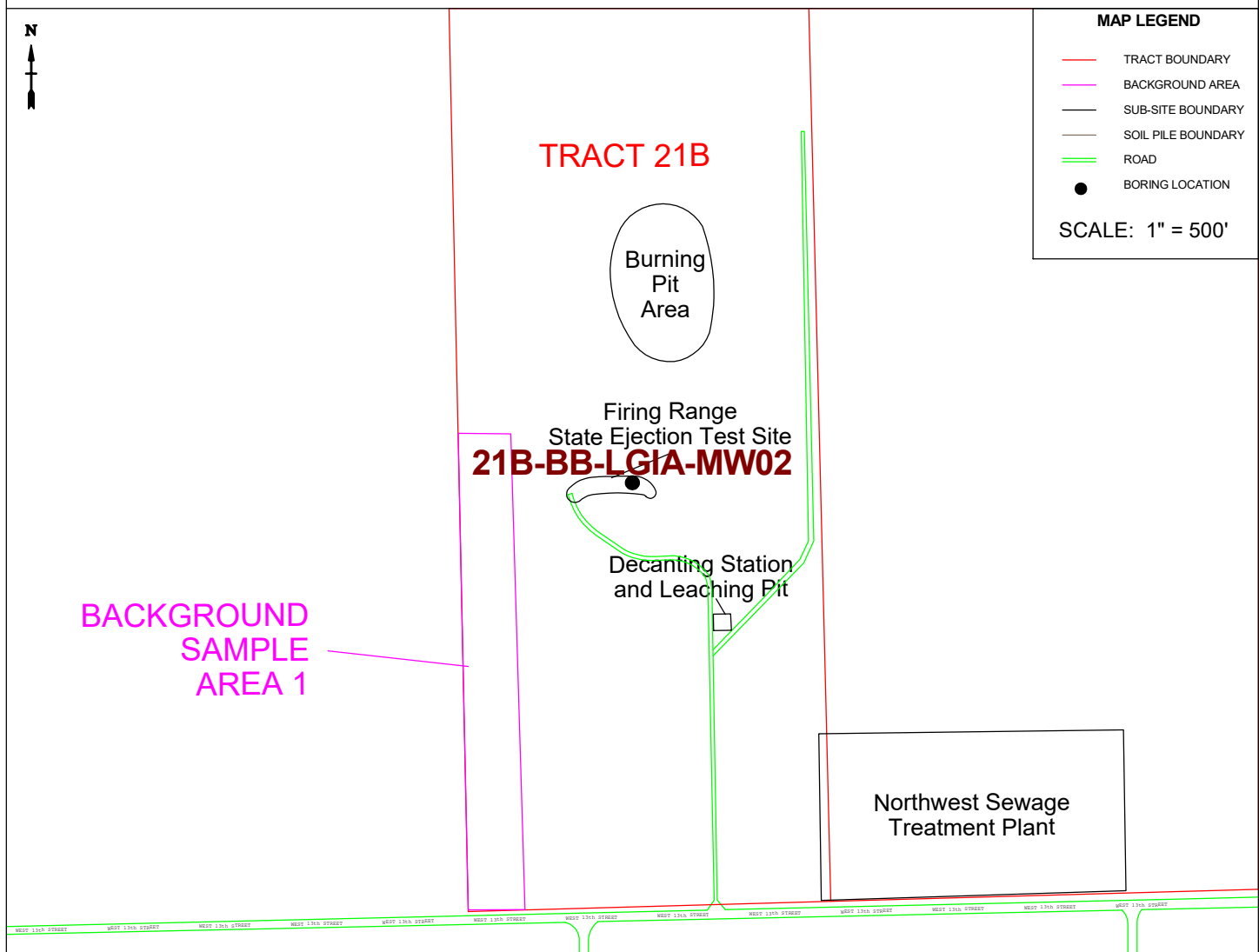
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BB-UGIA-MW01

| | | | | | |
|--|-------------------|---|---------------------------------------|---------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-BB-LGIA-MW02 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 7 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
404791.9 North 2048511.1 East | | | |
| | | 9. SURFACE ELEVATION
1913.9' MSL | | | |
| | | 10. DATE STARTED
5/16/2018 | | 11. DATE COMPLETED
5/16/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
17 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
15.92 ft on 5/17/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
50.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
16.24 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



| | | | |
|---------|------------------------------|---------|------------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 21B-BB-LGIA-MW02 |
|---------|------------------------------|---------|------------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BB-LGIA-MW02

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 2 OF 7 SHEETS | |
|--------------|--------------|---|--|-----------------------------------|--|---|-------------------|---|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1913.9 | 0 | (ML) CLAYEY SILT: Stiff, moist, dark brown, low plasticity, trace small cream veins. (2.5Y 3/1) | | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery | |
| 1912.9 | 1 | | | | | | | | |
| 1911.9 | 2 | | | | | | | | |
| 1910.9 | 3 | | | | | | | | |
| 1909.9 | 4 | | | | | | | | |
| 1908.9 | 5 | | | | | | | | |
| 1907.9 | 6 | | | | | | | | |
| 1906.9 | 7 | | | | | | | | |
| 1905.9 | 8 | | | | | | | | |
| 1904.9 | 9 | | | | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

21B-BB-LGIA-MW02

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BB-LGIA-MW02

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 3 OF 7 SHEETS | |
|--------------|--------------|---|--|-----------------------------------|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1904.9 | 9 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained mottling. (10y 3/1) | | | | | | | |
| 1903.9 | 10 | | | | | | | | |
| 1902.9 | 11 | | | | | | | | |
| 1901.9 | 12 | | | | | | | | |
| 1900.9 | 13 | | | | | | | | |
| 1899.9 | 14 | | | | | | | | |
| 1898.9 | 15 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | | | | |
| 1897.9 | 16 | | | | | | | | |
| 1896.9 | 17 | | | | | | | | |
| 1895.9 | 18 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BB-LGIA-MW02

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BB-LGIA-MW02

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 4 OF 7 SHEETS | |
|--------------|--------------|---|--|-----------------------------------|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1895.9 | 18 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | | | | | | |
| 1894.9 | 19 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 1893.9 | 20 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 1892.9 | 21 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 1891.9 | 22 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 1890.9 | 23 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 1889.9 | 24 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 1888.9 | 25 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 1887.9 | 26 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 1886.9 | 27 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BB-LGIA-MW02

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BB-LGIA-MW02

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 5 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1886.9 | 27 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | |
| 1885.9 | 28 | | | | | | |
| 1884.9 | 29 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
28.5-30.5 ft.
100% Rec. | | 3 | |
| 1883.9 | 30 | | | | | 4 | |
| 1882.9 | 31 | | | | | 5 | |
| 1881.9 | 32 | | | | | 5 | |
| 1880.9 | 33 | | | | | | |
| 1879.9 | 34 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
33.5-35.5 ft.
100% Rec. | | 3 | |
| 1878.9 | 35 | | | | | 4 | |
| | | | | | | 4 | |
| 1877.9 | 36 | | | | | 5 | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BB-LGIA-MW02

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BB-LGIA-MW02

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 6 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|------------------------------|----------------|
| 1877.9 | 36 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | |
| 1876.9 | 37 | | | | | | |
| 1875.9 | 38 | | | | | | |
| 1874.9 | 39 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
38.5-40.5 ft.
100% Rec. | | W

2

2

2 | |
| 1873.9 | 40 | | | | | | |
| 1872.9 | 41 | | | | | | |
| 1871.9 | 42 | | | | | | |
| 1870.9 | 43 | | | | | | |
| 1869.9 | 44 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
43.5-45.5 ft.
100% Rec. | | W

W

3 | |
| 1868.9 | 45 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BB-LGIA-MW02

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BB-LGIA-MW02

| PROJECT | | DISTRICT | | SHEET | | | OF | | SHEETS | |
|-------------------------------|--------------|--|--|--|---------------------------------|-------------------|----------------|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 7 | | | 7 | | 7 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| 1868.9 | 45 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | | | 3 | | | | |
| 1867.9 | 46 | | | | | | | | | |
| 1866.9 | 47 | | | | | | | | | |
| 1865.9 | 48 | (MH) ELASTIC SILT (95%): Low plasticity, low toughness, low dry strength, no dilatancy, very slightly moist, fine sand (5 %). (10YR 5/3) | | | | | | | | |
| 1864.9 | 49 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
48.5-50.5 ft.
100% Rec. | | 5 | | | | |
| | | | | | | 8 | | | | |
| | | | | | | 16 | | | | |
| 1863.9 | 50 | | | | | 20 | | | | |
| 1862.9 | 51 | Bottom of Borehole @ 50.5 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 17-48 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | | | |
| 1861.9 | 52 | | | | | | | | | |
| 1860.9 | 53 | | | | | | | | | |
| 1859.9 | 54 | | | | | | | | | |

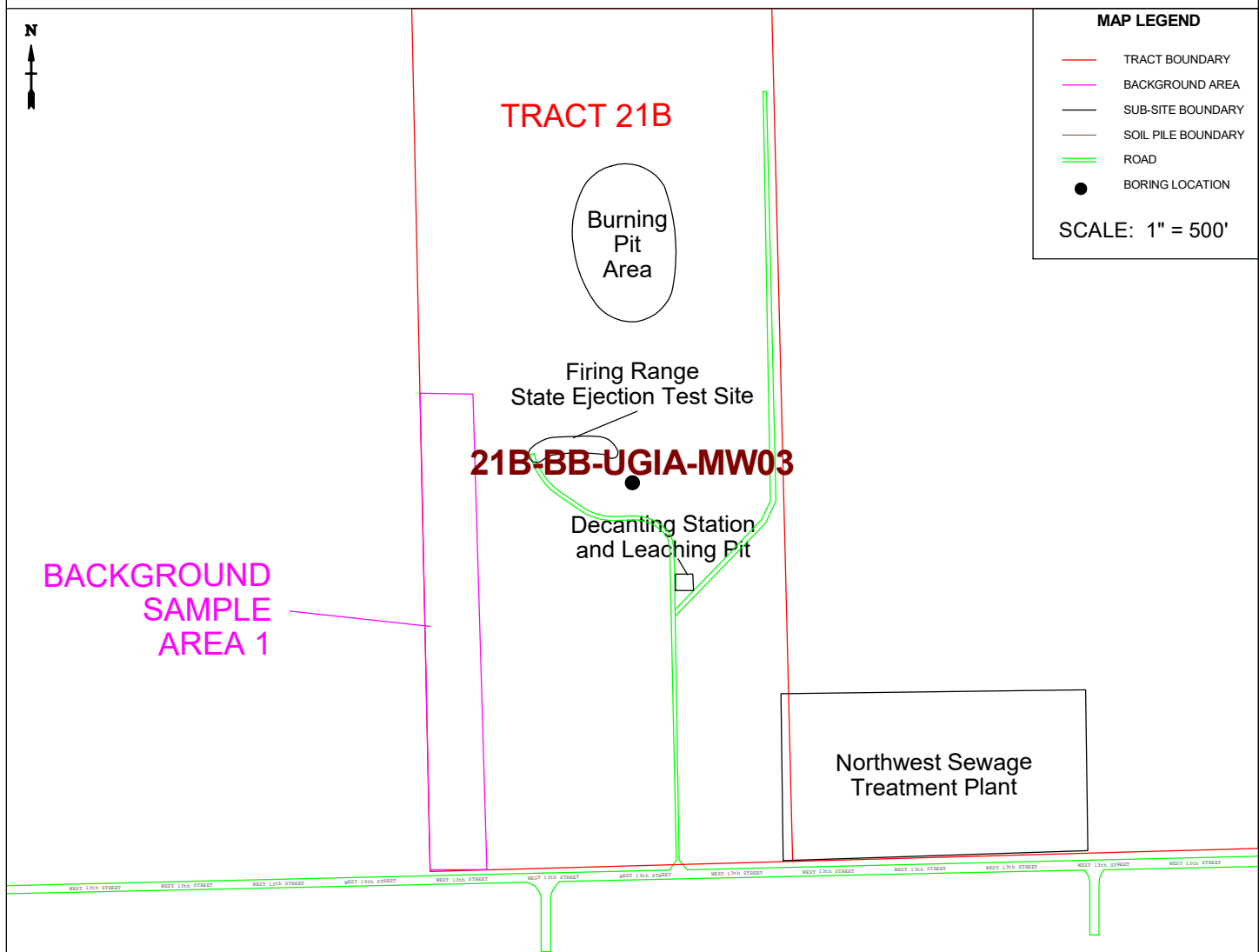
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BB-LGIA-MW02

| | | | | | |
|--|-------------------|---|---------------------------------------|----------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-BB-UGIA-MW03 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Mobile 57 | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
404672.2 North 2048624.8 East | | | |
| | | 9. SURFACE ELEVATION
1909.3' MSL | | | |
| | | 10. DATE STARTED
7/19/2018 | 11. DATE COMPLETED
7/19/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
12.54 ft on 7/20/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
21.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
12.32 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BB-UGIA-MW03

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | | SHEET 2 OF 4 SHEETS | |
|--------------|--------------|---|--|---|---------------------------------|-------------------|---|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1909.3 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery | | |
| 1908.3 | 1 | | | | | | | | |
| 1907.3 | 2 | | | | | | | | |
| 1906.3 | 3 | | | | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3.5-5.5 ft.
100% Rec. | | 4 | | | |
| 1905.3 | 4 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | | | | 3 | | | |
| | | | | | | 3 | | | |
| 1904.3 | 5 | | | | | 4 | | | |
| | | Same as above with increased plasticity and moisture. (2.5Y 3/1) | | | | | | | |
| 1903.3 | 6 | | | | | | | | |
| | | | | | | | | | |
| 1902.3 | 7 | | | | | | | | |
| | | | | | | | | | |
| 1901.3 | 8 | | | | | | | | |
| | | | | | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
8.5-10.5 ft.
100% Rec. | | 2 | | | |
| 1900.3 | 9 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BB-UGIA-MW03

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BB-UGIA-MW03

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | US Army Corps of Engineers - Omaha District | | | SHEET 3 OF 4 SHEETS | |
|--------------|--------------|---|--|--|---|---------------------------------|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1900.3 | 9 | Same as above with increased plasticity and moisture. (2.5Y 3/1) (continued) | | | | | 2 | | |
| | | | | | | | 3 | | |
| 1899.3 | 10 | | | | | | 2 | | |
| | | | | | | | 4 | | |
| 1898.3 | 11 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
10.5-12.5 ft.
100% Rec. | | 3 | | |
| | | | | | | | 3 | | |
| 1897.3 | 12 | | | | | | 4 | | |
| | | | | | | | 7 | | |
| 1896.3 | 13 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
12.5-14.5 ft.
100% Rec. | | 6 | | |
| | | | | | | | 7 | | |
| 1895.3 | 14 | | | | | | 8 | | |
| | | | | | | | | | |
| 1894.3 | 15 | | | | | | | | |
| | | | | | | | | | |
| 1893.3 | 16 | | | | | | | | |
| | | | | | | | | | |
| 1892.3 | 17 | | | | | | | | |
| | | | | | | | | | |
| 1891.3 | 18 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BB-UGIA-MW03

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


21B-BB-UGIA-MW03

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | | SHEET 4 OF 4 SHEETS | |
|--------------|--------------|---|--|---|---------------------------------|-------------------|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1891.3 | 18 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
18.5-20.5 ft.
100% Rec. | | 7 | | | |
| 1890.3 | 19 | | | | | 8 | | | |
| | | | | | | 8 | | | |
| 1889.3 | 20 | | | | | 8 | | | |
| | | | | | | | | | |
| 1888.3 | 21 | | | | | | | | |
| | | Bottom of Borehole @ 21 ft
10 Gallons of Water Lost During Drilling
Heaving Sands12.5-21 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | |
| 1887.3 | 22 | | | | | | | | |
| | | | | | | | | | |
| 1886.3 | 23 | | | | | | | | |
| | | | | | | | | | |
| 1885.3 | 24 | | | | | | | | |
| | | | | | | | | | |
| 1884.3 | 25 | | | | | | | | |
| | | | | | | | | | |
| 1883.3 | 26 | | | | | | | | |
| | | | | | | | | | |
| 1882.3 | 27 | | | | | | | | |

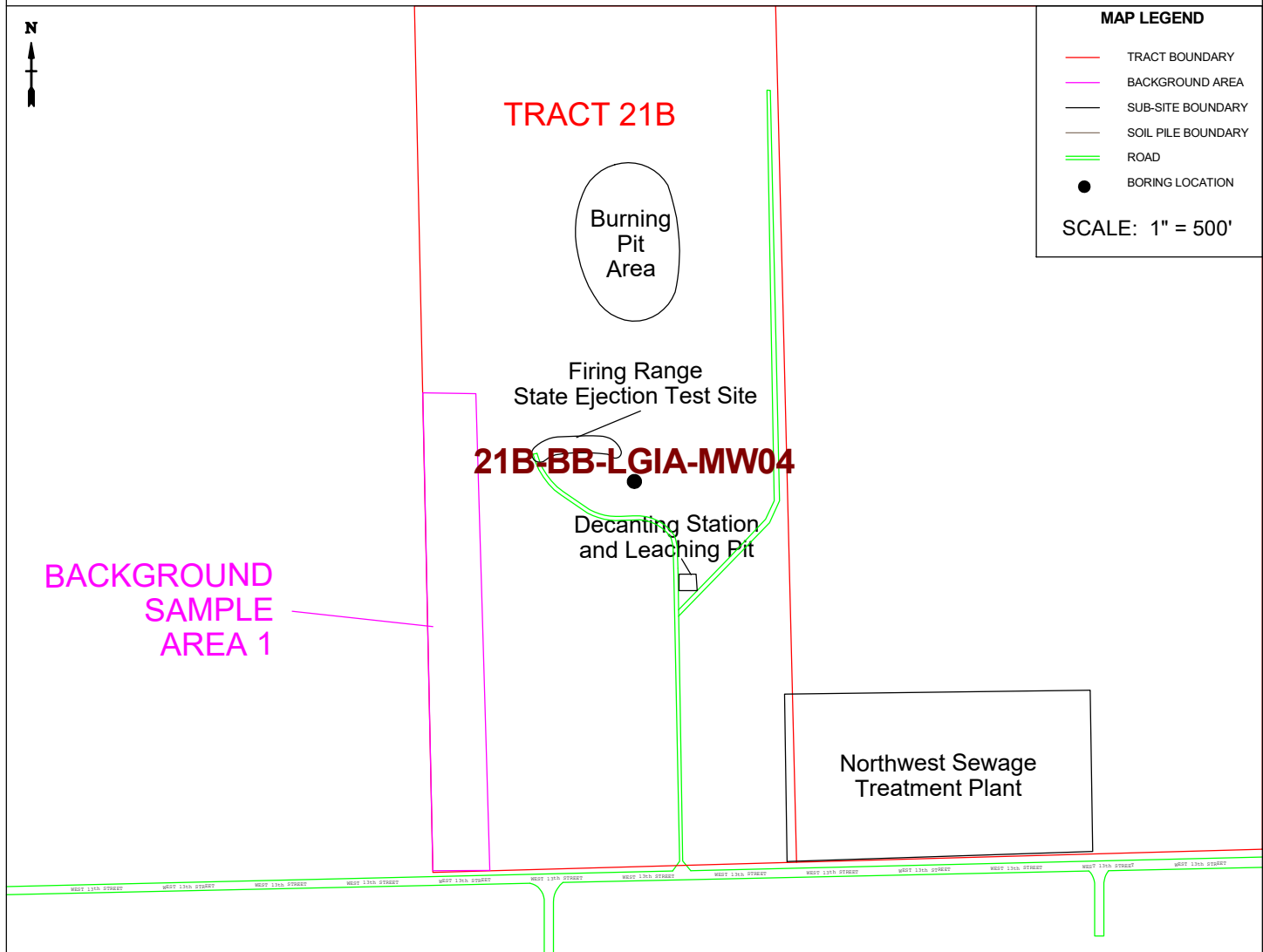
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BB-UGIA-MW03

| | | | | | |
|--|-------------------|---|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-BB-LGIA-MW04 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 7 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Mobile 57 | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
404675.5 North 2048620.9 East | | | |
| | | 9. SURFACE ELEVATION
1909.3' MSL | | | |
| | | 10. DATE STARTED
7/20/2018 | | 11. DATE COMPLETED
7/20/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
12.56 ft on 7/21/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
45.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
12.73 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BB-LGIA-MW04

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1909.3 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1908.3 | 1 | | | | | | |
| 1907.3 | 2 | | | | | | |
| 1906.3 | 3 | | | | | | |
| 1905.3 | 4 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3.5-5.5 ft.
100% Rec. | | 4 | |
| 1904.3 | 5 | | | | | 3 | |
| | | | | | | 3 | |
| 1903.3 | 6 | Same as above with increased plasticity and moisture. (2.5Y 3/1) | | | | 4 | |
| 1902.3 | 7 | | | | | | |
| 1901.3 | 8 | | | | | | |
| 1900.3 | 9 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
8.5-10.5 ft.
100% Rec. | | 2 | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BB-LGIA-MW04

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BB-LGIA-MW04

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 3 OF 7 SHEETS | |
|--------------|--------------|---|--|--|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1900.3 | 9 | Same as above with increased plasticity and moisture. (2.5Y 3/1) (continued) | | | | | 2 | | |
| | | | | | | | 3 | | |
| 1899.3 | 10 | | | | | | 2 | | |
| | | | | | | | 4 | | |
| 1898.3 | 11 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
10.5-12.5 ft.
100% Rec. | | 3 | | |
| | | | | | | | 3 | | |
| 1897.3 | 12 | | | | | | 4 | | |
| | | | | | | | 7 | | |
| 1896.3 | 13 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
12.5-14.5 ft.
100% Rec. | | 6 | | |
| | | | | | | | 7 | | |
| 1895.3 | 14 | | | | | | 8 | | |
| | | | | | | | | | |
| 1894.3 | 15 | | | | | | | | |
| | | | | | | | | | |
| 1893.3 | 16 | | | | | | | | |
| | | | | | | | | | |
| 1892.3 | 17 | | | | | | | | |
| | | | | | | | | | |
| 1891.3 | 18 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BB-LGIA-MW04

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BB-LGIA-MW04

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 4 OF 7 SHEETS | |
|--------------|--------------|---|--|--|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1891.3 | 18 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | | | | | | |
| | | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
18.5-20.5 ft.
100% Rec. | | 7 | | |
| 1890.3 | 19 | | | | | | 8 | | |
| | | | | | | | 8 | | |
| 1889.3 | 20 | | | | | | 8 | | |
| | | | | | | | | | |
| 1888.3 | 21 | | | | | | | | |
| | | | | | | | | | |
| 1887.3 | 22 | | | | | | | | |
| | | | | | | | | | |
| 1886.3 | 23 | | | | | | | | |
| | | | | | | | | | |
| 1885.3 | 24 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
23.5-25.5 ft.
100% Rec. | | 9 | | |
| | | | | | | | 8 | | |
| | | | | | | | 9 | | |
| 1884.3 | 25 | | | | | | 8 | | |
| | | | | | | | | | |
| 1883.3 | 26 | | | | | | | | |
| | | | | | | | | | |
| 1882.3 | 27 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BB-LGIA-MW04

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BB-LGIA-MW04

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | | SHEET 5 OF 7 SHEETS | |
|--------------|--------------|---|--|---|---------------------------------|-------------------|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1882.3 | 27 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | | | | | | |
| 1881.3 | 28 | | | | | | | | |
| 1880.3 | 29 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 7
28.5-30.5 ft.
100% Rec. | | 7 | | | |
| 1879.3 | 30 | | | | | 9 | | | |
| | | | | | | 10 | | | |
| 1878.3 | 31 | | | | | 10 | | | |
| 1877.3 | 32 | | | | | | | | |
| 1876.3 | 33 | | | | | | | | |
| 1875.3 | 34 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 8
33.5-35.5 ft.
100% Rec. | | 8 | | | |
| | | | | | | 9 | | | |
| 1874.3 | 35 | | | | | 10 | | | |
| | | | | | | 9 | | | |
| 1873.3 | 36 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BB-LGIA-MW04

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BB-LGIA-MW04

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 6 OF 7 SHEETS | |
|--------------|--------------|---|--|--|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1873.3 | 36 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | | | | | | |
| 1872.3 | 37 | | | | | | | | |
| 1871.3 | 38 | | | | | | | | |
| 1870.3 | 39 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 9
38.5-40.5 ft.
100% Rec. | | 6 | | |
| | | | | | | | 8 | | |
| | | | | | | | 7 | | |
| 1869.3 | 40 | | | | | | 8 | | |
| 1868.3 | 41 | | | | | | | | |
| 1867.3 | 42 | | | | | | | | |
| 1866.3 | 43 | (MH) ELASTIC SILT (95%): Low plasticity, low toughness, low dry strength, no dilatancy, very slightly moist, fine sand (5 %). (10Y 4/1) | | | | | | | |
| 1865.3 | 44 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 10
43.5-45.5 ft.
100% Rec. | | 7 | | |
| | | | | | | | 6 | | |
| | | | | | | | 6 | | |
| 1864.3 | 45 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BB-LGIA-MW04

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BB-LGIA-MW04

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 7 | | | | 7 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1864.3 | 45 | (MH) ELASTIC SILT (95%): Low plasticity, low toughness, low dry strength, no dilatancy, very slightly moist, fine sand (5 %). (10Y 4/1)
(continued) | | | | 7 | | | | | |
| 1863.3 | 46 | Bottom of Borehole @ 45.5 ft
100 Gallons of Water Lost During Drilling
Heaving Sands12.5-43.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | | | | |
| 1862.3 | 47 | | | | | | | | | | |
| 1861.3 | 48 | | | | | | | | | | |
| 1860.3 | 49 | | | | | | | | | | |
| 1859.3 | 50 | | | | | | | | | | |
| 1858.3 | 51 | | | | | | | | | | |
| 1857.3 | 52 | | | | | | | | | | |
| 1856.3 | 53 | | | | | | | | | | |
| 1855.3 | 54 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BB-LGIA-MW04

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**Tract 21B BPA Boring
Logs Soil samples**

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| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>21B-BPA-SB0401</i> | |
|--|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSI Engineering</i> | | SHEET
1 OF 3 | |
| 3. PROJECT
<i>CHAAP RIES</i> | | | | 4. LOCATION
<i>Grand Island, NE - CHAAP</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>G600 Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>G600 Geoprobe
4"x2" Dual Tube Sampler</i> | | | | 8. HOLE LOCATION
<i>BPA-SB0401</i> | | | |
| | | | | 9. SURFACE ELEVATION <i>AM</i> | | | |
| | | | | 10. DATE STARTED
<i>5.15.18</i> | | 11. DATE COMPLETED
<i>5.15.18</i> | |
| 12. OVERBURDEN THICKNESS
— | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | |
| 14. TOTAL DEPTH OF HOLE
<i>8'</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | |
| 18. GEOTECHNICAL SAMPLES
<i>X</i> | | DISTURBED
— | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>X</i> | | VOC | | METALS
<i>X</i> | | OTHER (SPECIFY)
<i>Exp.</i> | |
| 22. DISPOSITION OF HOLE
<i>Lithology Sampling</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL
<i>X</i> | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepeth</i> | |
| <div style="display: flex; justify-content: space-between;"> LOCATION SKETCH/COMMENTS SCALE: <i>Not to Scale</i> </div> <div style="text-align: center; margin-top: 20px;"> </div> | | | | | | | |
| PROJECT
<i>CHAAP RIES</i> | | | | | | HOLE NO
<i>21B-BPA-SB0401</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | HOLE NUMBER
21B-BPA-SB0401 | |
|--|--------------|---|-------------------------------|--|---------------------------------|-------------------------------|----------------------------------|
| PROJECT
CHAAP RIFS | | | INSPECTOR
A. Hedgepath | | | SHEET 2 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PIU
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | RECOVERY
BLOW COUNT
(g) | REMARKS
(h) |
| | 0 | Top Soil - v Dk Brwn,
moist, L to non plastic, medium
soft | 0.0 | | | | Collect SB04-1
@ 1120 |
| | 1 | | | | | | |
| | 2 | Lean clay w/ Tr. F. Sand,
moist, Fe stain, M. gray,
stiff, L to non plastic | | | 1 | 75% | |
| | 3 | Same as above | 0.0 | CL | | | Collect SB04-4
@ 1125
+ FD |
| | 4 | Same as above
w/ Increasing Fe stain | | CL | | | |
| | 5 | | | | | | |
| | 6 | | | | 2 | 75% | |
| | 7 | | | | | | |

| | |
|-----------------------|---------------------------|
| PROJECT
CHAAP RIFS | HOLE NO
21B-BPA-SB0401 |
|-----------------------|---------------------------|

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | HOLE NUMBER
Z1B- BPA-5804 01 | |
|--|--------------|---------------------------------|-------------------------------|--|---------------------------------|--|--|
| PROJECT
CHAAP - RIFS | | | INSPECTOR
A. Hedgepeth | | | SHEET
3 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PSD
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | REMARKS
(g) | |
| | 7 | See previous page | 0.0 | | | Collect SBA-8
@ 1130
dms/msd | |
| | 8 | End of boring @ 8' | | | | | |
| | 9 | | | | | | |
| | 10 | | | | | | |
| | 11 | | | | | | |
| | 12 | | | | | | |
| | 13 | | | | | | |
| | 14 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO
Z1B-~~BPA-5804~~ 01

| HTRW DRILLING LOG | | | | DISTRICT
USACE - Omaha | | HOLE NUMBER
21B- BPA-5B03-02 | |
|--|--|------------------------|--|--|--|---|--|
| 1. COMPANY NAME
HydroGeoLogic, Inc. | | | | 2. DRILLING CONTRACTOR
GSS Engineering | | SHEET
1 OF 3 | |
| 3. PROJECT
CHAAP RIFS | | | | 4. LOCATION
Grand Island, NE - CHAAP | | | |
| 5. NAME OF DRILLER
M. Wold | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
G600 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
G600 Geoprobe
4"x2" Dual Tube Sampler | | | | 8. HOLE LOCATION
BPA-5B03-02 | | | |
| | | | | 9. SURFACE ELEVATION AK | | | |
| | | | | 10. DATE STARTED
5.15.18 | | 11. DATE COMPLETED
5.15.18 | |
| 12. OVERBURDEN THICKNESS
— | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | |
| 14. TOTAL DEPTH OF HOLE
8' | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | |
| 18. GEOTECHNICAL SAMPLES
X | | DISTURBED
— | | UNDISTURBED
X | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
X | | VOC
— | | METALS
X | | OTHER (SPECIFY)
Expl. | |
| | | | | | | 21. TOTAL CORE
— % | |
| 22. DISPOSITION OF HOLE
Lithology Sampling | | BACKFILLED
X | | MONITORING WELL
— | | 23. SIGNATURE OF INSPECTOR
A. Hodgepatz | |
| <div style="display: flex; justify-content: space-between;"> LOCATION SKETCH/COMMENTS SCALE: Not to Scale </div> <div style="text-align: center; margin-top: 20px;"> </div> | | | | | | | |
| PROJECT
CHAAP RIFS | | | | | | HOLE NO
21B- BPA-5B03-02 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
218-BPA-SB03-02 |
|--|--------------|---|-------------------------------|---|---------------------------------|-------------------------------|--------------------------------|
| PROJECT
CHAAP RIFS | | | INSPECTOR
A. Hedgepath | | | SHEET 2 OF 2 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEO TECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
| 1130
5-15-18 | 0 | Topsoil - moist, V. DK Brown,
L. plastic to non, soft | 0.0 | | | | Collect SB03-02
@ 1135 |
| | 1 | | | | | | |
| | 2 | Lean clay w Tr. F. Sand
Shift, light gray, moist,
L. plastic to non | | | 1 | 75% | |
| | 3 | | | | | | Collect SB03-02
@ 1140 |
| | 4 | Same as above | 0.0 | | | | |
| | 5 | | | | | | |
| | 6 | | | | 2 | 75% | |
| | 7 | | | | | | |

| | |
|-----------------------|----------------------------|
| PROJECT
CHAAP RIFS | HOLE NO
218-BPA-SB03-02 |
|-----------------------|----------------------------|

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER 02 |
|--|--------------|---------------------------------|------------------------|--|---------------------------------|------------------------------|-----------------------|
| PROJECT CHAAP - RIFS | | | INSPECTOR A. Hedgpeth | | | SHEET 3 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Flowing
BLOW COUNT
(g) | REMARKS
(h) |
| | 7 | Same as above, L. plastic | PSD
0.0 | | | | Collect SB03-8 @ 1145 |
| 1140
S.15.18 | 8 | End of boring at 8' | | | | | |
| | 9 | | | | | | |
| | 10 | | | | | | |
| | 11 | | | | | | |
| | 12 | | | | | | |
| | 13 | | | | | | |
| | 14 | | | | | | |

| | |
|--------------------|----------------------|
| PROJECT CHAAP RIFS | HOLE NO 21B-BPA-SB03 |
|--------------------|----------------------|

| HTRW DRILLING LOG | | | | DISTRICT
USACE - Omaha | | HOLE NUMBER
21B - BPA-SB03 | |
|--|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
HydroGeoLogic, Inc. | | | | 2. DRILLING CONTRACTOR
GSS Engineering | | SHEET
1 OF 3 | |
| 3. PROJECT
CHAAP RIES | | | | 4. LOCATION
Grand Island, NE - CHAAP | | | |
| 5. NAME OF DRILLER
M. Wold | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
G600 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
G600 Geoprobe
4"x2" Dual Tube Sampler | | | | 8. HOLE LOCATION
BPA-SB03 | | | |
| | | | | 9. SURFACE ELEVATION
— | | | |
| | | | | 10. DATE STARTED
5.15.18 | | 11. DATE COMPLETED
5.15.18 | |
| 12. OVERBURDEN THICKNESS
— | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | |
| 14. TOTAL DEPTH OF HOLE
8' | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | |
| 18. GEOTECHNICAL SAMPLES
X | | DISTURBED
— | | UNDISTURBED
X | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
X | | VOC
— | | METALS
X | | OTHER (SPECIFY)
Exp. | |
| 22. DISPOSITION OF HOLE
Lithology Sampling | | BACKFILLED
X | | MONITORING WELL
— | | 23. SIGNATURE OF INSPECTOR
A. Hedgepath | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="position: relative; width: 100%; height: 100%;"> <div style="position: absolute; top: 10%; left: 10%;"> </div> <div style="position: absolute; top: 40%; left: 40%;"> <div style="text-align: center;"> <div style="display: flex; justify-content: space-around; width: 100%;"> 15' 15' </div> <div style="display: flex; justify-content: space-around; width: 100%;"> SB03 SB02 SB01 </div> </div> </div> </div> | | | | | | | |
| PROJECT
CHAAP RIES | | | | | | HOLE NO
21B - BPA-SB03 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | HOLE NUMBER
21B-8BA-SB03 | |
|--|--------------|--|-------------------------------|--|---------------------------------|-------------------------------|--------------------------------------|
| PROJECT
CHAAP RIFS | | | INSPECTOR
A. Hedgepath | | | SHEET 2 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PIB
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
| 1155
5-15-76 | 0 | Topsoil - moist, L. OK
B-mn, nonplastic, m. stiff | 0.0 | | | | Collect SS03
@ 1200 |
| | 1 | | | | | | |
| | 2 | Lean Clay w Tr. F. Sand
Fe stain, moist, L. plastic
to non, m. stiff, light gray | | | | 1 | 75% |
| | 3 | Same as above | 0.0 | | | | Collect SB03-4
@ 1205
+ ms/msd |
| | 4 | | | | | | Collect SB
44 |
| | 5 | | | | | | |
| | 6 | | | | | 2 | 75% |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO
21B-BPA-SB03

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|--|------------------------|--|---------------------------------|--------------------------------|--------------------------|
| PROJECT | | | INSPECTOR | | | | SHEET |
| CHAAP - RIFS | | | A. Hedgepatz | | | | 3 OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Retention
BLOW COUNT
(g) | REMARKS
(h) |
| | 7 | Same as above, becoming
soft & m. plastic | PSA
0.0 | | | | Collect SBO3-8
@ 1210 |
| | 8 | End of boring at 8' | | | | | |
| | 9 | | | | | | |
| | 10 | | | | | | |
| | 11 | | | | | | |
| | 12 | | | | | | |
| | 13 | | | | | | |
| | 14 | | | | | | |

| | | | |
|---------|------------|---------|--------------|
| PROJECT | CHAAP RIFS | HOLE NO | 21B-RPA-SBO3 |
|---------|------------|---------|--------------|

| HTRW DRILLING LOG | | | | DISTRICT
USACE - Omaha | | HOLE NUMBER
21B-BPA-SB04 | |
|--|--|------------------------|--|---|--|--|--|
| 1. COMPANY NAME
HydroGeoLogic, Inc. | | | | 2. DRILLING CONTRACTOR
GSE Engineering | | SHEET
1 OF 3 | |
| 3. PROJECT
CHAAP RIFS | | | | 4. LOCATION
Grand Island, NE - CHAAP | | | |
| 5. NAME OF DRILLER
M. Wold | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
GG00 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
GG00 Geoprobe
4"x2" Dual Tube Sampler | | | | 8. HOLE LOCATION
BPA-SB04 | | | |
| | | | | 9. SURFACE ELEVATION
— | | | |
| | | | | 10. DATE STARTED
5.15.18 | | 11. DATE COMPLETED
5.15.18 | |
| 12. OVERBURDEN THICKNESS
— | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | |
| 14. TOTAL DEPTH OF HOLE
8' | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | |
| 18. GEOTECHNICAL SAMPLES
X | | DISTURBED
— | | UNDISTURBED
X | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
L | | VOC | | METALS
L | | OTHER (SPECIFY)
Explosive | |
| | | | | OTHER (SPECIFY) | | OTHER (SPECIFY) | |
| 22. DISPOSITION OF HOLE
Lithology Sampling | | BACKFILLED
X | | MONITORING WELL | | 21. TOTAL CORE
— % | |
| | | | | | | 23. SIGNATURE OF INSPECTOR
A. Hedgespeth | |
| <div style="display: flex; justify-content: space-between;"> LOCATION SKETCH/COMMENTS SCALE: Not to Scale </div> <div style="text-align: center; margin-top: 20px;"> </div> | | | | | | | |
| PROJECT
CHAAP RIFS | | | | | | HOLE NO
21B-BPA-SB04 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
218-BPA-SB04 |
|--|--------------|--|-------------------------------|---|---------------------------------|-------------------------------|------------------------------|
| PROJECT
CHAAP RIFS | | | INSPECTOR
A. Hedgepath | | | SHEET
2 | SHEETS
2 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEO TECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
| 1725
5.15.8 | 0 | Topsoil - V. DK Brown
L. plastic texture, soft | 0.0 | | | | Collect SSB
@ 1730
JFD |
| | 1 | | | | | | |
| | 2 | Lean Clay w F-F. Sand,
light Gray, Fe stain, moist,
L. to non plastic, stiff | | | | 75% | |
| | 3 | Same as above | | | | | Collect SSB of A
@ 1735 |
| | 4 | Same as above - L. plastic | | | | | Collect SSB of S
AN |
| | 5 | | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | 75% | |

PROJECT
CHAAP RIFS

HOLE NO
218-BPA-SB04

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
21B-BPA-SBA |
|--|--------------|---------------------------------|-------------------------------|--|---------------------------------|----------------------------|----------------------------|
| PROJECT
CHAAP - RIFS | | | INSPECTOR
A. Hedgepeth | | | | SHEET
3 OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PSD
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Heavy
BLOW COUNT
(g) | REMARKS
(h) |
| | 7 | See previous page | 0.0 | | | | collect SBA-8 @ 1740 |
| 1735
5.15.18 | 8 | End of Boring @ 8' | | | | | |
| | 9 | | | | | | |
| | 10 | | | | | | |
| | 11 | | | | | | |
| | 12 | | | | | | |
| | 13 | | | | | | |
| | 14 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO
21B-BPA-SBA

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>21B-RPA-SB05</i> | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET
<i>1</i> OF <i>3</i> SHEETS | |
| 3. PROJECT
<i>CHAAP RIES</i> | | | | 4. LOCATION
<i>Grand Island, NE - CHAAP</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>G600 Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>G600 Geoprobe
4"x2" Dual Tube Sampler</i> | | | | 8. HOLE LOCATION
<i>BPA-SB05</i> | | | |
| | | | | 9. SURFACE ELEVATION
— | | | |
| | | | | 10. DATE STARTED
<i>5.15.18</i> | | 11. DATE COMPLETED
<i>5.15.18</i> | |
| 12. OVERBURDEN THICKNESS
— | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | |
| 14. TOTAL DEPTH OF HOLE
<i>8'</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | |
| 18. GEOTECHNICAL SAMPLES
<i>X</i> | | DISTURBED
— | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>1</i> | | VOC
— | | METALS
<i>1</i> | | OTHER (SPECIFY)
<i>Exp.</i> | |
| 22. DISPOSITION OF HOLE
<i>Lithology Sampling</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL
— | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepath</i> | |
| LOCATION SKETCH/COMMENTS | | | | SCALE: <i>Not to Scale</i> | | | |
| | | | | | | | |
| PROJECT
<i>CHAAP RIES</i> | | | | | | HOLE NO
<i>21B-RPA-SB05</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|-------------------------------|--|---------------------------------|-------------------------------|--------------------------|
| PROJECT | | | INSPECTOR | | | SHEET | |
| CHAAP RIFS | | | A. Hedgepath | | | 2 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PIU
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
| 1255
5.15.18 | 0 | Topsoil - V. DK Brown, L.
to non plastic, Soft | 0.0 | | | | Collect SSOS
@ 1300 |
| | 1 | | | | | | |
| | 2 | lean clay w. S-F. Sand
L. to non plastic, stiff
moist, light gray | | | 1 | 75% | |
| | 3 | Same as above | 0.0 | | | | Collect SBOS-4
@ 1305 |
| | 4 | Same as above | | | | | |
| | 5 | | | | | | |
| | 6 | | | | 2 | 75% | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO 218-BPA-SBOS

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---------------------------------|------------------------|--|---------------------------------|----------------|--------------------------|
| PROJECT | | | INSPECTOR | | | | SHEET |
| CHAAP - RIFS | | | A. Hedgepatz | | | | 3 OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | REMARKS
(g) | REMARKS
(h) |
| 1315
5.15 | 7 | Same as above - m. plastic | PSA
0.0 | | | | Collect SBO5-8
@ 1310 |
| | 8 | End of boring at 8' | | | | | |
| | 9 | | | | | | |
| | 10 | | | | | | |
| | 11 | | | | | | |
| | 12 | | | | | | |
| | 13 | | | | | | |
| | 14 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO ZIB-BPA-SBO5

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | HOLE NUMBER
<i>21B-BPA-SB06</i> |
|---|--|--|---|--|--------------------------------------|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET <i>1</i> OF <i>3</i> | |
| 3. PROJECT
<i>CHAAP RIES</i> | | | 4. LOCATION
<i>Grand Island, NE - CHAAP</i> | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>G600 Geoprobe</i> | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>G600 Geoprobe
4"x2" Dual Tube Sampler</i> | | | 8. HOLE LOCATION
<i>BPA-SB06</i> | | |
| | | | 9. SURFACE ELEVATION
— | | |
| | | | 10. DATE STARTED
<i>5.15.18</i> | | 11. DATE COMPLETED
<i>5.15.18</i> |
| 12. OVERBURDEN THICKNESS
— | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | |
| 14. TOTAL DEPTH OF HOLE
<i>8'</i> | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | |
| 18. GEOTECHNICAL SAMPLES
<i>X</i> | | DISTURBED
— | | UNDISTURBED
<i>X</i> | |
| 19. TOTAL NUMBER OF CORE BOXES
— | | | | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | |
| | | OTHER (SPECIFY) | | OTHER (SPECIFY) | |
| | | OTHER (SPECIFY) | | OTHER (SPECIFY) | |
| 21. TOTAL CORE
— % | | | | | |
| 22. DISPOSITION OF HOLE
<i>Lithology Sampling</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | |
| | | OTHER (SPECIFY) | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgespeth</i> | |
| LOCATION SKETCH/COMMENTS | | | | | |
| SCALE: <i>Not to Scale</i> | | | | | |
| | | | | | |
| PROJECT: <i>CHAAP RIES</i> | | | | | HOLE NO
<i>21B-BPA-SB06</i> |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
218-BPA-SB06 |
|--|--------------|--|---------------------------|--|---------------------------------|-------------------------------|-----------------------------|
| PROJECT
CHAAP RIFS | | | INSPECTOR
A. Hedgepath | | | SHEET
2 | SHEETS
OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
| 1308
5.15.18 | 0 | Topsoil - Moderate, L. to
non plastic, & Dk Bwn | P10
0.0 | | | | Collect SS06
@ 1310 |
| | 1 | | | | | | |
| | 2 | Lean clay w/ T. F. Sand
Stiff, moist to dry,
non plastic | | | | 1 75% | |
| | 3 | Same as above | | | | | Collect SB06-A
@ 1315 |
| | 4 | Same as above | | | | | |
| | 5 | | | | | | |
| | 6 | | | | | 2 75% | |
| | 7 | | | | | | |

PROJECT
CHAAP RIFS

HOLE NO
218-BPA-SB06

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
218-BPA-SB06 |
|--|--------------|--|--------------------------|--|---------------------------------|--------------------------|-----------------------------|
| PROJECT
CHAAP - RIFS | | | INSPECTOR
A. Hedgpeth | | | | SHEET
3 OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | REMARKS
(h) | |
| | 7 | Same as above, with moist
L to m plastic | PSD
O.O | | | Collect SB06-8
@ 1320 | |
| 1315
5.13.18 | 8 | | | | | | |
| | 9 | | | | | | |
| | 10 | | | | | | |
| | 11 | | | | | | |
| | 12 | | | | | | |
| | 13 | | | | | | |
| | 14 | | | | | | |
| <div>End of boring @ 8'</div> | | | | | | | |

PROJECT CHAAP RIFS

HOLE NO
218-BPA-SB06

| HTRW DRILLING LOG | | | | DISTRICT
USACE - Omaha | | HOLE NUMBER
21B-BPA-5807 | |
|---|--|------------------------|--|---|--|--|--|
| 1. COMPANY NAME
HydroGeologic, Inc. | | | | 2. DRILLING CONTRACTOR
GSE Engineering | | SHEET
1 OF 3 SHEETS | |
| 3. PROJECT
CHAAP RIES | | | | 4. LOCATION
Grand Island, NE - CHAAP | | | |
| 5. NAME OF DRILLER
M. Wold | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
G600 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
G600 Geoprobe
4"x2" Dual Tube Sampler | | | | 8. HOLE LOCATION
BPA-5807 | | | |
| | | | | 9. SURFACE ELEVATION
— | | | |
| | | | | 10. DATE STARTED
5.15.18 | | 11. DATE COMPLETED
5.15.18 | |
| 12. OVERBURDEN THICKNESS
— | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | |
| 14. TOTAL DEPTH OF HOLE
8' | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | |
| 18. GEOTECHNICAL SAMPLES
X | | DISTURBED
— | | UNDISTURBED
X | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
X | | VOC
— | | METALS
X | | OTHER (SPECIFY)
Exp | |
| | | | | | | 21. TOTAL CORE
— % | |
| 22. DISPOSITION OF HOLE
Lithology Sampling | | BACKFILLED
X | | MONITORING WELL
— | | 23. SIGNATURE OF INSPECTOR
A. Hedgespeth | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| SCALE: Not to Scale | | | | | | | |
| | | | | | | | |
| PROJECT
CHAAP RIES | | | | | | HOLE NO
21B-BPA-5807 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
21B-SB07 |
|--|--------------|---|-------------------------------|--|---------------------------------|-------------------------------|--------------------------|
| PROJECT
CHAAP RIFS | | | INSPECTOR
A. Hedgepath | | | | SHEET
2 OF 2 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PIU
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
| 1320
5-15-98 | 0 | Topsoil | 0.0 | | | | Collect 5507
@ 1325 |
| | 1 | | | | | | |
| | 2 | Lean Clay w/ Tr. F Sand
Some Fe Stain, light Grey
& Dark Red, m to L plastic
moist | | | 1 | 759 | |
| | 3 | Same as above | | | | | Collect 5807-A
@ 1328 |
| | 4 | Same as above | | | | | |
| | 5 | | | | | | |
| | 6 | | | | 2 | 757 | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO 21B-RPA-SB07

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---------------------------------|------------------------|--|---------------------------------|----------------|-----------------------|
| PROJECT | | | INSPECTOR | | | SHEET | |
| CHAAP - RIFS | | | A. Hedgepeth | | | 3 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | REMARKS
(g) | REMARKS
(h) |
| 1325 | 7 | See previous page | PSD | | | | Collect SBOZ-8 @ 1330 |
| 5-15-18 | 8 | End of boring @ 8' | | | | | |
| | 9 | | | | | | |
| | 10 | | | | | | |
| | 11 | | | | | | |
| | 12 | | | | | | |
| | 13 | | | | | | |
| | 14 | | | | | | |

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>21B-BPA-SB08</i> | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET
<i>1</i> OF <i>3</i> SHEETS | |
| 3. PROJECT
<i>CHAAP RIES</i> | | | | 4. LOCATION
<i>Grand Island, NE - CHAAP</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>G600 Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>G600 Geoprobe
4"x2" Dual Tube Sampler</i> | | | | 8. HOLE LOCATION
<i>BPA - SB08</i> | | | |
| | | | | 9. SURFACE ELEVATION
— | | | |
| | | | | 10. DATE STARTED
<i>5.15.18</i> | | 11. DATE COMPLETED
<i>5.15.18</i> | |
| 12. OVERBURDEN THICKNESS
— | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | |
| 14. TOTAL DEPTH OF HOLE
<i>8'</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | |
| 18. GEOTECHNICAL SAMPLES
<i>X</i> | | DISTURBED
— | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>X</i> | | VOC
<i>ANAL</i> | | METALS
<i>X</i> | | OTHER (SPECIFY)
<i>Exp.</i> | |
| 22. DISPOSITION OF HOLE
<i>Lithology Sampling</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepeth</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| SCALE: <i>Not to Scale</i> | | | | | | | |
| | | | | | | | |
| PROJECT
<i>CHAAP RIES</i> | | | | | | HOLE NO
<i>21B-BPA-SB08</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
218-BPA-5808 |
|--|--------------|---|-------------------------------|--|---------------------------------|-------------------------------|-----------------------------|
| PROJECT
CHAAP RIFS | | | INSPECTOR
A. Hedgepath | | | SHEET
2 | SHEETS
OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PIB
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
| 1330.0
5.15.18 | 0 | Topsoil | 0.0 | | | | Collect 5508
@ 1335 |
| | 1 | | | | | | |
| | 2 | Lean Clay w F.F. Sand
L. plastic, moist, stiff | | | | 1 | 75% |
| | 3 | Same as above | 0.0 | | | | Collect 5808-4
@ 1338 |
| | 4 | Same as above | | | | | |
| | 5 | | | | | | |
| | 6 | | | | | 2 | 75% |
| | 7 | | | | | | |

PROJECT
CHAAP RIFS

HOLE NO
218-BPA-5808

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---------------------------------|------------------------|--|---------------------------------|-------------------------------|-----------------------|
| PROJECT | | | INSPECTOR | | | | SHEET |
| CHAAP - RIFS | | | A. Hedgepeth | | | | 3 OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
| | 7 | Same as above | 0.0 | | | | Collect SB08-8 @ 1340 |
| 1335
5.15.18 | 8 | End of boring | @ 8' | | | | |
| | 9 | | | | | | |
| | 10 | | | | | | |
| | 11 | | | | | | |
| | 12 | | | | | | |
| | 13 | | | | | | |
| | 14 | | | | | | |

| | | | |
|---------|------------|---------|--------------|
| PROJECT | CHAAP RIFS | HOLE NO | 218-BPA-SB08 |
|---------|------------|---------|--------------|

| HTRW DRILLING LOG | | | | DISTRICT
USACE - Omaha | | HOLE NUMBER
21B-BPA-SB07 | |
|--|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
HydroGeoLogic, Inc. | | | | 2. DRILLING CONTRACTOR
GSS Engineering | | SHEET
1 OF 2 | |
| 3. PROJECT
CHAAP RZES | | | | 4. LOCATION
Grand Island, NE - CHAAP | | | |
| 5. NAME OF DRILLER
M. Wold | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
GG00 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
GG00 Geoprobe
4"x2" Dual Tube Sampler | | | | 8. HOLE LOCATION
BPA-SB09 | | | |
| | | | | 9. SURFACE ELEVATION
— | | | |
| | | | | 10. DATE STARTED
5.15.18 | | 11. DATE COMPLETED
5.18.18 | |
| 12. OVERBURDEN THICKNESS
— | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | |
| 14. TOTAL DEPTH OF HOLE
5' | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | |
| 18. GEOTECHNICAL SAMPLES
X | | DISTURBED
— | | UNDISTURBED
X | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
X | | VOC | | METALS
X | | OTHER (SPECIFY)
Exp. | |
| 22. DISPOSITION OF HOLE
Lithology Sampling | | BACKFILLED
X | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
A. Hedgepath | |
| <div style="display: flex; justify-content: space-between;"> <div>LOCATION SKETCH/COMMENTS</div> <div>SCALE: Not to Scale</div> </div> <div style="text-align: center; margin-top: 20px;"> </div> | | | | | | | |
| PROJECT
CHAAP RZES | | | | | | HOLE NO
21B-BPA-SB09 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | HOLE NUMBER
21B-BPA-5B09 | |
|--|--------------|--|-------------------------------|--|---------------------------------|-------------------------------|--------------------------|
| PROJECT
CHAAP RIFS | | | INSPECTOR
A. Hedgepath | | | SHEET
2 OF 2 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PIU
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
| 1035
5-15-18 | 0 | Topsoil - v. DK Bmn, Soft
moist, Low to nonplastic | 0.0 | | | | Collect 5B09
@ 1040 |
| | 1 | | | | | | |
| | 2 | Lean clay w/ Tr. F. Sand
m. Gray, moist, stiff,
L. to nonplastic | | 1 | | 75% | |
| | 3 | | | | | | |
| | 4 | Same as above | 0.0 | 2 | | 100%
Soft
AN | Collect 5B09-S
@ 1045 |
| 1040
5-15-18 | 5 | End of boring at 5' | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |

PROJECT
CHAAP RIFS

HOLE NO
21B-BPA-5B09

| HTRW DRILLING LOG | | | | DISTRICT
USACE - Omaha | | HOLE NUMBER
21B-BPA-SB10 | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
HydroGeoLogic, Inc. | | | | 2. DRILLING CONTRACTOR
GSS Engineering | | SHEET
1 OF 2 | |
| 3. PROJECT
CHAAP RZFS | | | | 4. LOCATION
Grand Island, NE - CHAAP | | | |
| 5. NAME OF DRILLER
M. Wold | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
G600 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
G600 Geoprobe
4"x2" Dual Tube Sampler | | | | 8. HOLE LOCATION
BPA-SB10 | | | |
| | | | | 9. SURFACE ELEVATION
— | | | |
| | | | | 10. DATE STARTED
5.15.18 | | 11. DATE COMPLETED
5.15.18 | |
| 12. OVERBURDEN THICKNESS
— | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | |
| 14. TOTAL DEPTH OF HOLE
5' | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | |
| 18. GEOTECHNICAL SAMPLES
X | | DISTURBED
— | | UNDISTURBED
X | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
X | | VOC | | METALS
X | | OTHER (SPECIFY)
Exp. | |
| | | | | | | 21. TOTAL CORE
— % | |
| 22. DISPOSITION OF HOLE
Lithology Sampling | | BACKFILLED
X | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
A. Hedgepath | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| SCALE: Not to Scale | | | | | | | |
| | | | | | | | |
| PROJECT
CHAAP RZFS | | | | | | HOLE NO
21B-BPA-SB10 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
218-BPA-SB10 |
|--|--------------|--|-------------------------------|--|---------------------------------|-------------------------------|-----------------------------|
| PROJECT
CHAAP RIFS | | | INSPECTOR
A. Hedgepath | | | | SHEET
2 OF 2 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
| 1025
5-15-18 | 0 | Topsoil - V. Dk Brown, moist
noncohesive, soft | 0.0 | | | | Collect SS10
@ 1030 |
| | 1 | | | | | | |
| | 2 | Green Clay w/ Tr. S. Sand,
stiff, moist, L. plastic,
M. Gray | | 1 | | | |
| | 3 | | | | | | |
| | 4 | Same as above | 0.0 | 2 | | | Collect SB10-5
@ 1035 |
| 1030
5-15-18 | 5 | End of Boring @ 5' | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |

PROJECT
CHAAP RIFS

HOLE NO.
218-BPA-SB10

| HTRW DRILLING LOG | | | | DISTRICT
USACE - Omaha | | HOLE NUMBER
21B-BPA-SBZ1 | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
HydroGeoLogic, Inc. | | | | 2. DRILLING CONTRACTOR
GSE Engineering | | SHEET
1 OF 2 SHEETS | |
| 3. PROJECT
CHAAP RZFS | | | | 4. LOCATION
Grand Island, NE - CHAAP | | | |
| 5. NAME OF DRILLER
M. Wadd | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
G600 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
G600 Geoprobe
1"x2" Dual Tube Sampler | | | | 8. HOLE LOCATION
BPA-SBZ1 | | | |
| | | | | 9. SURFACE ELEVATION
— | | | |
| | | | | 10. DATE STARTED
5.15.18 | | 11. DATE COMPLETED
5.18.18 | |
| 12. OVERBURDEN THICKNESS
— | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | |
| 14. TOTAL DEPTH OF HOLE
5' | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | |
| 18. GEOTECHNICAL SAMPLES
X | | DISTURBED
— | | UNDISTURBED
X | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
2 | | VOC | | METALS
2 | | OTHER (SPECIFY)
Expl. | |
| 22. DISPOSITION OF HOLE
Lithology Sampling | | BACKFILLED
X | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
A. Hedgepeth | |
| LOCATION SKETCH/COMMENTS | | | | SCALE: Not to Scale | | | |
| | | | | | | | |
| PROJECT
CHAAP RZFS | | | | | | HOLE NO
21B-BPA-SBZ1 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | HOLE NUMBER
218-3PA-SB21 | |
|--|--------------|--|-------------------------------|--|---------------------------------|-------------------------------|------------------------------|
| PROJECT
CHAAP RIFS | | | INSPECTOR
A. Hedgepath | | | SHEET 2 OF 2 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
| | 0 | Topsoil - VDK Brown, moist,
Soft, L. to non plastic | 0.0 | | | | Collect SSZ1
@ 1055 |
| | 1 | | | | | | |
| | 2 | Lean Clay w F. Sand
Stiff, moist, m. gray, L.
Plastic | 0.0 | 1 | | 75% | Collect BPA-SB21-3
@ 1100 |
| | 3 | | | | | | |
| | 4 | Same as above | | 2 | | 100% | Collect SB21-5
@ 1100 |
| | 5 | Some End of boring as above, ^{became} more moist, M. plastic | 0.0 | | | | Collect BPA-SB21-6
@ 1105 |
| | 6 | End of Boring @ 6' | | | | | |
| | 7 | | | | | | |

PROJECT
CHAAP RIFS

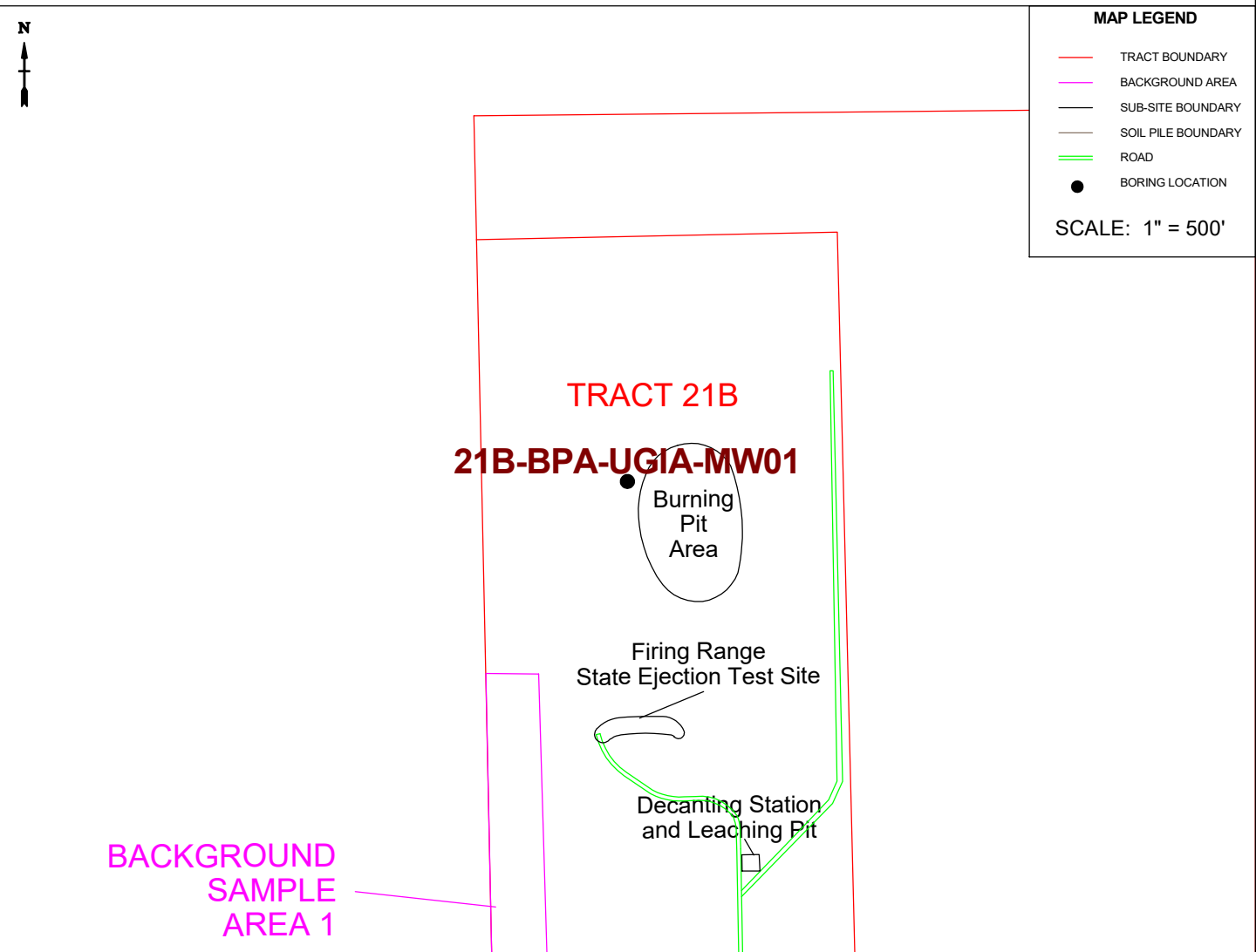
HOLE NO
218-3PA-SB21

**Tract 21B BPA Boring Logs
Monitoring Wells**

| | | | | | |
|--|-------------------|--|---------------------------------------|----------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-BPA-UGIA-MW01 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
405513.4 North 2048412.0 East | | | |
| | | 9. SURFACE ELEVATION
1907.2' MSL | | | |
| | | 10. DATE STARTED
5/17/2018 | | 11. DATE COMPLETED
5/17/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
13.2 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
9.31 ft on 5/18/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
21.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
9.78 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-UGIA-MW01

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|---|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 2 | | OF | | 4 | | SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1907.2 | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery | | | | |
| 1906.2 | 1 | | | | | | | | | | |
| 1905.2 | 2 | | | | | | | | | | |
| 1904.2 | 3 | | | | | | | | | | |
| 1903.2 | 4 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3.5-5.5 ft.
100% Rec. | | 3 | | | | | |
| | 3 | | | | | | | | | | |
| | 5 | | | | | | | | | | |
| | 6 | | | | | | | | | | |
| 1902.2 | 5 | | | | | | | | | | |
| 1901.2 | 6 | | | | | | | | | | |
| 1900.2 | 7 | | | | | | | | | | |
| 1899.2 | 8 | | | | | | | | | | |
| 1898.2 | 9 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
8.5-10.5 ft.
100% Rec. | | 1 | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-UGIA-MW01

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-UGIA-MW01

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 3 OF 4 SHEETS | |
|--------------|--------------|---|--|--|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1898.2 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | | 2 | | |
| | | | | | | | 1 | | |
| 1897.2 | 10 | | | | | | 2 | | |
| | | | | | | | 3 | | |
| 1896.2 | 11 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
10.5-12.5 ft.
100% Rec. | | 3 | | |
| | | | | | | | 2 | | |
| | | | | | | | 3 | | |
| 1895.2 | 12 | | | | | | 3 | | |
| | | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
12.5-14.5 ft.
100% Rec. | | 7 | | |
| 1894.2 | 13 | | | | | | 9 | | |
| | | | | | | | 10 | | |
| 1893.2 | 14 | | | | | | 14 | | |
| | | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, fine to medium grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | | |
| 1892.2 | 15 | | | | | | | | |
| | | | | | | | | | |
| 1891.2 | 16 | | | | | | | | |
| | | | | | | | | | |
| 1890.2 | 17 | | | | | | | | |
| | | | | | | | | | |
| 1889.2 | 18 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-UGIA-MW01

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


21B-BPA-UGIA-MW01

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 4 | | | | 4 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1889.2 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, fine to medium grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | | | |
| 1888.2 | 19 | | | | | | | | | | |
| 1887.2 | 20 | | | | | | | | | | |
| 1886.2 | 21 | | | | | | | | | | |
| 1885.2 | 22 | Bottom of Borehole @ 21.5 ft
10 Gallons of Water Lost During Drilling
Heaving Sands13.2-21.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | | | |
| 1884.2 | 23 | | | | | | | | | | |
| 1883.2 | 24 | | | | | | | | | | |
| 1882.2 | 25 | | | | | | | | | | |
| 1881.2 | 26 | | | | | | | | | | |
| 1880.2 | 27 | | | | | | | | | | |

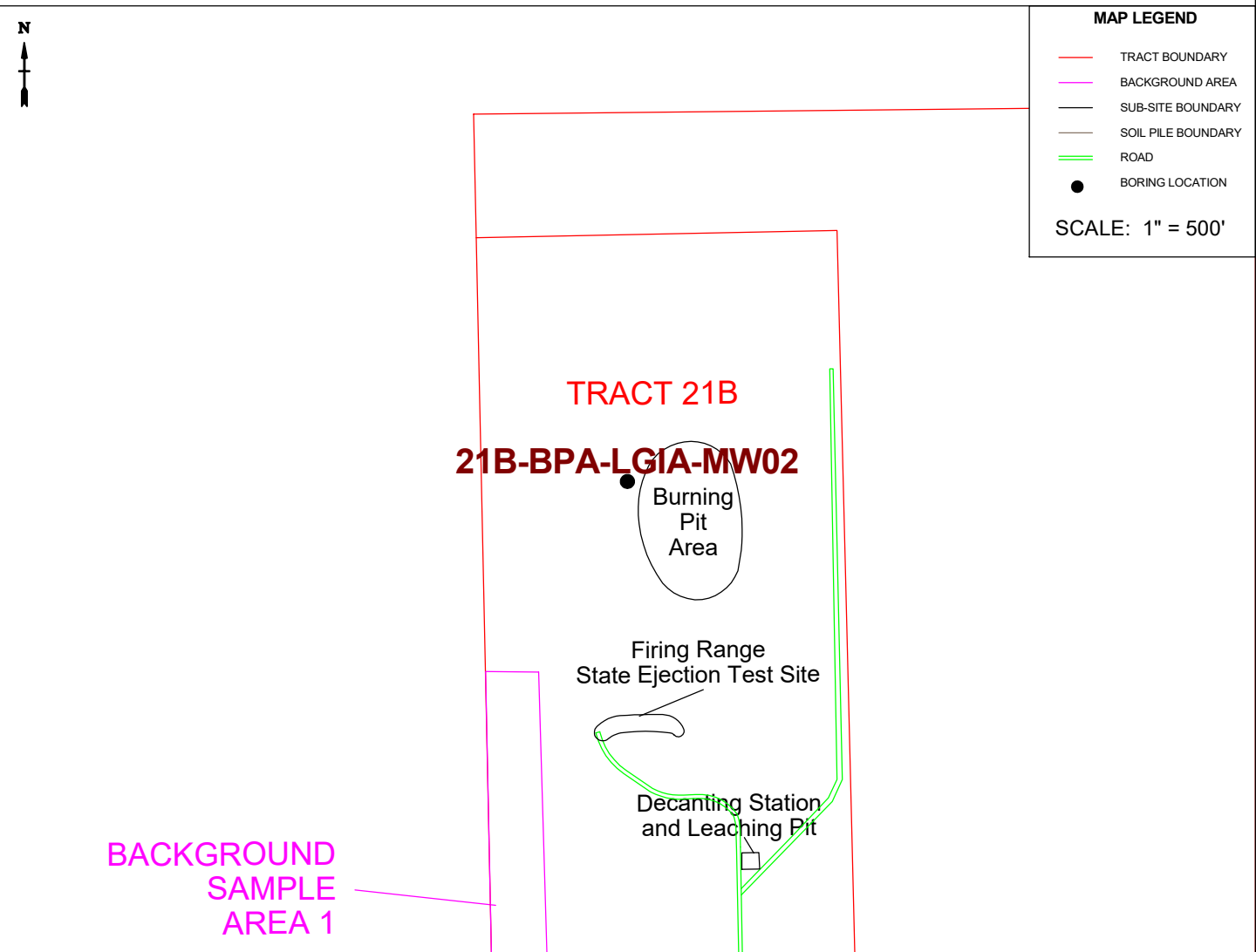
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-UGIA-MW01

| | | | | | |
|--|-------------------|--|---------------------------------------|--|----------------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-BPA-LGIA-MW02 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 6 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
405507.9 North 2048412.6 East | | | |
| | | 9. SURFACE ELEVATION
1907.2' MSL | | | |
| | | 10. DATE STARTED
5/17/2018 | 11. DATE COMPLETED
5/17/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
13.2 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
9.08 ft on 5/18/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
43.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
9.35 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | | 21. TOTAL CORE RECOVERY
N/A % |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-LGIA-MW02

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|--|
| 1907.2 | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1906.2 | 1 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1905.2 | 2 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1904.2 | 3 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1903.2 | 4 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1902.2 | 5 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1901.2 | 6 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1900.2 | 7 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1899.2 | 8 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1898.2 | 9 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-LGIA-MW02

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-LGIA-MW02

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|
| 1898.2 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | | |
| 1897.2 | 10 | | | | | | |
| 1896.2 | 11 | | | | | | |
| 1895.2 | 12 | | | | | | |
| 1894.2 | 13 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, fine to medium grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | |
| 1893.2 | 14 | | | | | | |
| 1892.2 | 15 | | | | | | |
| 1891.2 | 16 | | | | | | |
| 1890.2 | 17 | | | | | | |
| 1889.2 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

21B-BPA-LGIA-MW02

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-LGIA-MW02

| PROJECT | | DISTRICT | | SHEET | | | OF | | SHEETS | |
|-------------------------------|--------------|--|--|--|---------------------------------|-------------------|----------------|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 4 | | | 6 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| 1889.2 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, fine to medium grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | | |
| 1888.2 | 19 | | | | | | | | | |
| 1887.2 | 20 | | | | | | | | | |
| 1886.2 | 21 | | | | | | | | | |
| 1885.2 | 22 | | | | | | | | | |
| 1884.2 | 23 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
23-25 ft.
100% Rec. | | 8 | | | | |
| 1883.2 | 24 | | | | | 9 | | | | |
| | | | | | | 9 | | | | |
| 1882.2 | 25 | | | | | 9 | | | | |
| 1881.2 | 26 | | | | | | | | | |
| 1880.2 | 27 | | | | | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

21B-BPA-LGIA-MW02

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-LGIA-MW02

| PROJECT | | Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 5 OF 6 SHEETS | |
|--------------|--------------|--|--|--|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1880.2 | 27 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, fine to medium grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | |
| 1879.2 | 28 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
28-30 ft.
100% Rec. | | 6 | | |
| 1878.2 | 29 | | | | | | 7 | | |
| | | | | | | | 8 | | |
| | | | | | | | 8 | | |
| 1877.2 | 30 | | | | | | | | |
| | | | | | | | | | |
| 1876.2 | 31 | | | | | | | | |
| | | | | | | | | | |
| 1875.2 | 32 | | | | | | | | |
| | | | | | | | | | |
| 1874.2 | 33 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
33-35 ft.
100% Rec. | | 7 | | |
| | | | | | | | 8 | | |
| 1873.2 | 34 | | | | | | 8 | | |
| | | | | | | | 9 | | |
| 1872.2 | 35 | | | | | | | | |
| | | | | | | | | | |
| 1871.2 | 36 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-LGIA-MW02

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-LGIA-MW02

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 6 OF 6 SHEETS


| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1871.2 | 36 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, fine to medium grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | |
| 1870.2 | 37 | | | | | | |
| 1869.2 | 38 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
38-40 ft.
100% Rec. | | 9 | |
| 1868.2 | 39 | | | | | 13 | |
| | | | | | | 18 | |
| | | | | | | 20 | |
| 1867.2 | 40 | (MH) ELASTIC SILT (95%): Low plasticity, low
toughness, low dry strength, no dilatancy, very
slightly moist, fine sand (5 %). (10Y 4/1) | | | | | |
| 1866.2 | 41 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
41-43 ft.
100% Rec. | | 8 | |
| | | | | | | 10 | |
| 1865.2 | 42 | | | | | 11 | |
| | | | | | | 11 | |
| 1864.2 | 43 | Bottom of Borehole @ 43 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 13.2-40 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | |
| 1863.2 | 44 | | | | | | |
| 1862.2 | 45 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

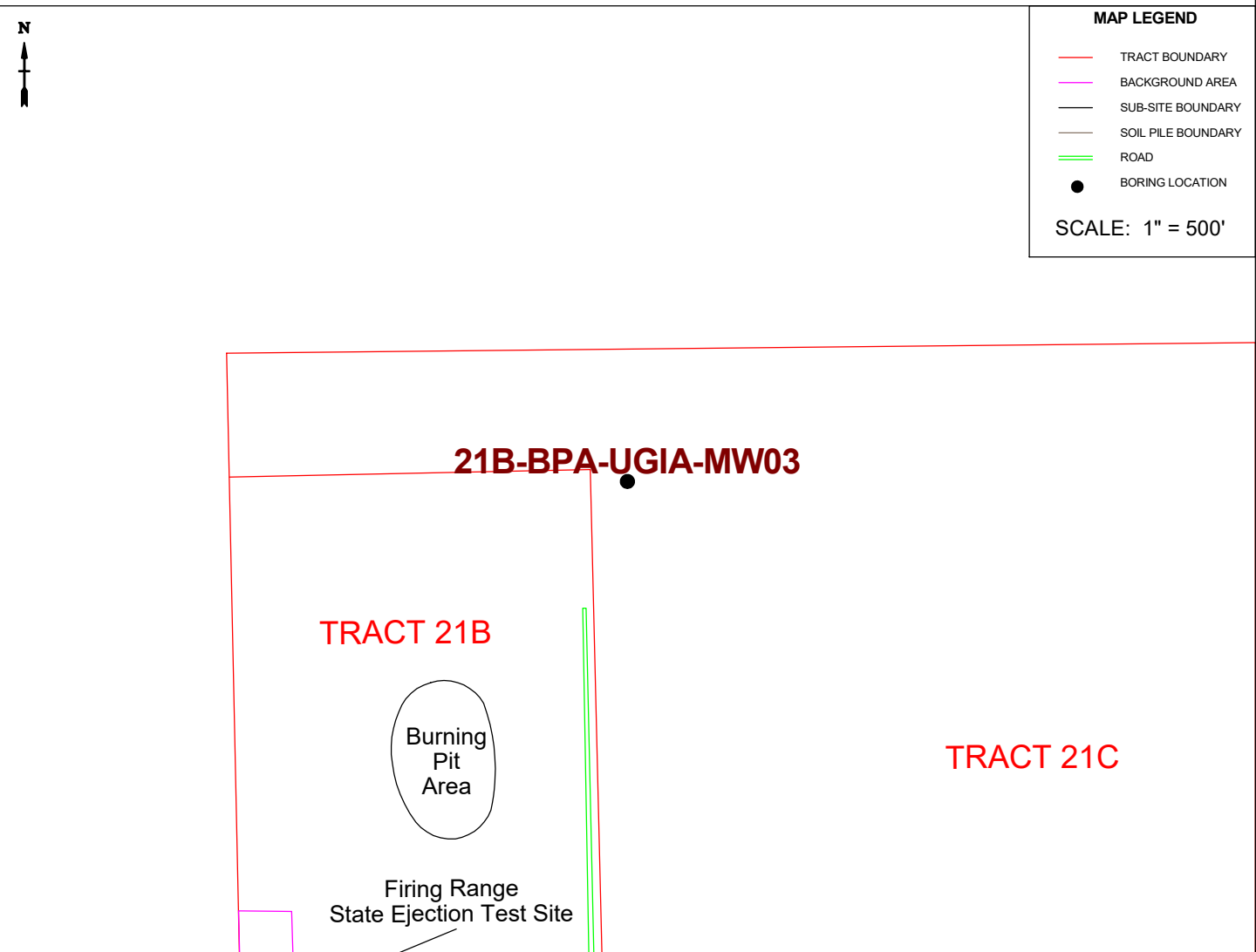
HOLE NO

21B-BPA-LGIA-MW02

| | | | | | | | | | |
|--|--|-------------------|--|------------------------|--|---------------------------------------|---------------------|--|--|
| HTRW DRILLING LOG | | | DISTRICT
US Army Corps of Engineers - Omaha District | | | HOLE NUMBER
21B-BPA-UGIA-MW03 | | | |
| 1. COMPANY NAME
ATI / HGL | | | 2. DRILLING CONTRACTOR
GSI | | | | SHEET 1 OF 4 SHEETS | | |
| 3. PROJECT
CHAAP | | | 4. LOCATION
Grand Island, Nebraska | | | | | | |
| 5. NAME OF DRILLER
J. Tinnell | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | | 8. HOLE LOCATION
406222.5 North 2049149.8 East | | | | | | |
| | | | 9. SURFACE ELEVATION
1907.1' MSL | | | | | | |
| | | | 10. DATE STARTED
3/30/2018 | | | 11. DATE COMPLETED
3/30/2018 | | | |
| 12. OVERBURDEN THICKNESS
N/A | | | 15. DEPTH GROUNDWATER ENCOUNTERED
12 Feet Below the Ground Surface | | | | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
10.97 ft on 4/4/2018 | | | | | | |
| 14. TOTAL DEPTH OF HOLE
20.2 Feet Below the Ground Surface | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | | | | |
| 18. GEOTECHNICAL SAMPLES
0 | | DISTURBED
N/A | | UNDISTURBED
N/A | | 19. TOTAL NUMBER OF CORE BOXES
--- | | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | | VOC
NA | | METALS
NA | | OTHER (SPECIFY)
NA | | OTHER (SPECIFY)
NA | |
| | | | | | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | | BACKFILLED
N/A | | MONITORING WELL
YES | | OTHER (SPECIFY)
Well Borehole | | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-UGIA-MW03

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 4 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1907.1 | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1906.1 | 1 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1905.1 | 2 | | | | | | |
| 1904.1 | 3 | | | | | | |
| 1903.1 | 4 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3.5-5.5 ft.
100% Rec. | | 2 | |
| | | | | | | 3 | |
| | | | | | | 4 | |
| 1902.1 | 5 | | | | | 5 | |
| 1901.1 | 6 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1900.1 | 7 | | | | | | |
| 1899.1 | 8 | | | | | | |
| | | *See Next Page | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
8.5-10.5 ft.
100% Rec. | | 2 | |
| 1898.1 | 9 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

21B-BPA-UGIA-MW03

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-UGIA-MW03

| PROJECT | | DISTRICT | | ANALYTICAL | | | | SHEET | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|----------------|-------|--|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | | 3 | | 4 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | | | |
| 1898.1 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | 2 | | | | | | | |
| | | | | | | 2 | | | | | | | |
| 1897.1 | 10 | | | | | 2 | | | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
10.5-12.5 ft.
100% Rec. | | 3 | | | | | | | |
| 1896.1 | 11 | | | | | 3 | | | | | | | |
| | | | | | | 5 | | | | | | | |
| 1895.1 | 12 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, fine to medium grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | 7 | | | | | | | |
| | | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, fine to medium grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | | | | | | |
| 1894.1 | 13 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 1893.1 | 14 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 1892.1 | 15 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 1891.1 | 16 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 1890.1 | 17 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 1889.1 | 18 | | | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-UGIA-MW03

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


21B-BPA-UGIA-MW03

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | | SHEET 4 OF 4 SHEETS | |
|--------------|--------------|---|-----------------------------------|---|---------------------------------|-------------------|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1889.1 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, fine to medium grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | |
| 1888.1 | 19 | | | | | | | | |
| 1887.1 | 20 | | | | | | | | |
| 1886.1 | 21 | Bottom of Borehole @ 20.2 ft
10 Gallons of Water Lost During Drilling
Heaving Sands12-20.2 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | |
| 1885.1 | 22 | | | | | | | | |
| 1884.1 | 23 | | | | | | | | |
| 1883.1 | 24 | | | | | | | | |
| 1882.1 | 25 | | | | | | | | |
| 1881.1 | 26 | | | | | | | | |
| 1880.1 | 27 | | | | | | | | |

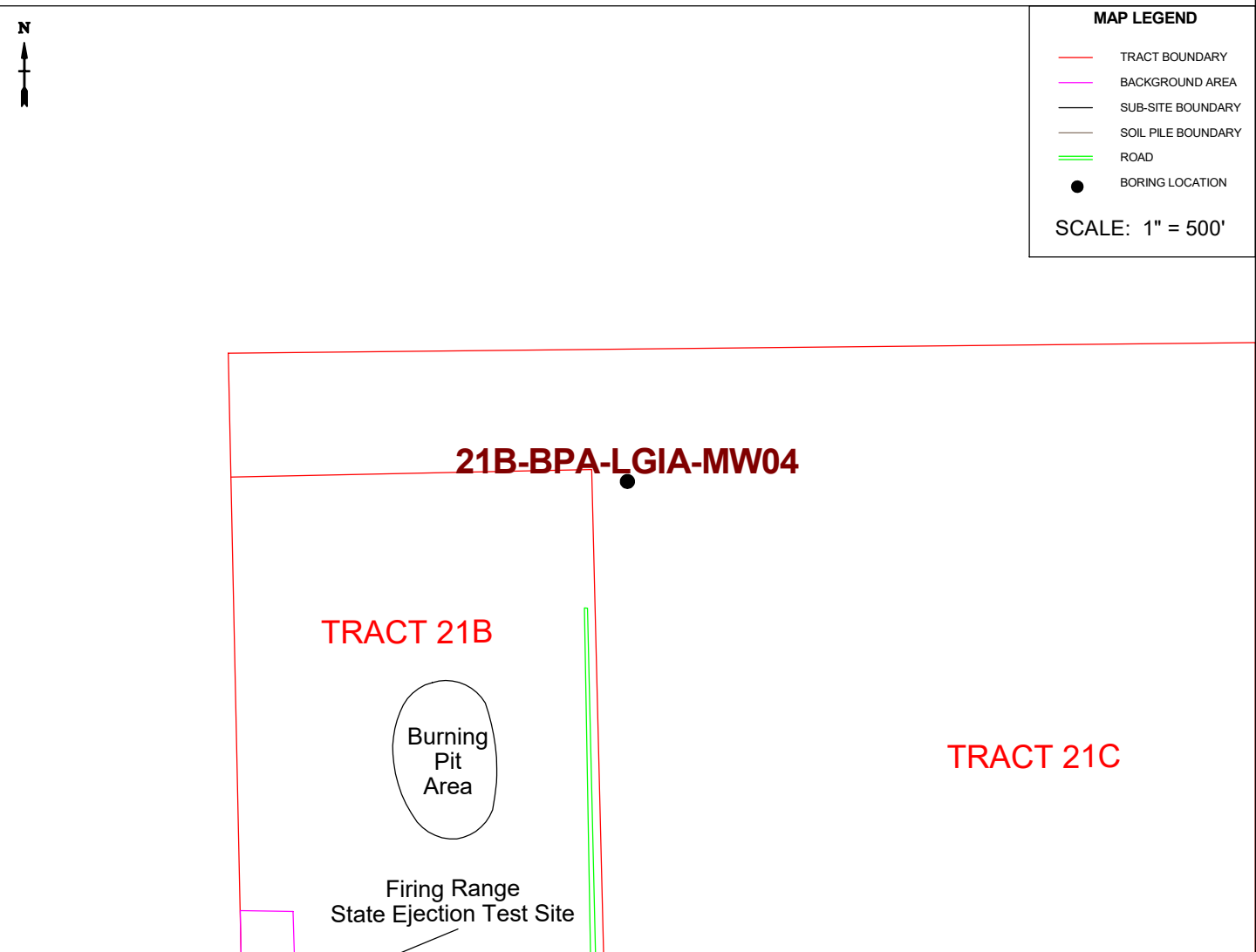
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-UGIA-MW03

| | | | | | | | | | |
|--|--|-------------------|--|------------------------|--|---------------------------------------|-----------------|--|--|
| HTRW DRILLING LOG | | | DISTRICT
US Army Corps of Engineers - Omaha District | | | HOLE NUMBER
21B-BPA-LGIA-MW04 | | | |
| 1. COMPANY NAME
ATI / HGL | | | 2. DRILLING CONTRACTOR
GSI | | | | SHEET
1 OF 6 | | |
| 3. PROJECT
CHAAP | | | 4. LOCATION
Grand Island, Nebraska | | | | | | |
| 5. NAME OF DRILLER
J. Tinnell | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | | 8. HOLE LOCATION
406222.3 North 2049145.2 East | | | | | | |
| | | | 9. SURFACE ELEVATION
1907.2' MSL | | | | | | |
| | | | 10. DATE STARTED
3/30/2018 | | | 11. DATE COMPLETED
3/30/2018 | | | |
| 12. OVERBURDEN THICKNESS
N/A | | | 15. DEPTH GROUNDWATER ENCOUNTERED
12 Feet Below the Ground Surface | | | | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
10.73 ft on 4/4/2018 | | | | | | |
| 14. TOTAL DEPTH OF HOLE
40.5 Feet Below the Ground Surface | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | | | | |
| 18. GEOTECHNICAL SAMPLES
0 | | DISTURBED
N/A | | UNDISTURBED
N/A | | 19. TOTAL NUMBER OF CORE BOXES
--- | | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | | VOC
NA | | METALS
NA | | OTHER (SPECIFY)
NA | | OTHER (SPECIFY)
NA | |
| | | | | | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | | BACKFILLED
N/A | | MONITORING WELL
YES | | OTHER (SPECIFY)
Well Borehole | | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-LGIA-MW04

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1907.2 | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1906.2 | 1 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1905.2 | 2 | | | | | | |
| 1904.2 | 3 | | | | | | |
| 1903.2 | 4 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3.5-5.5 ft.
100% Rec. | | 2 | |
| | | | | | | 3 | |
| | | | | | | 4 | |
| 1902.2 | 5 | | | | | 5 | |
| 1901.2 | 6 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1900.2 | 7 | | | | | | |
| 1899.2 | 8 | | | | | | |
| | | *See Next Page | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
8.5-10.5 ft.
100% Rec. | | 2 | |
| 1898.2 | 9 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO

21B-BPA-LGIA-MW04

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-LGIA-MW04

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | | SHEET 3 OF 6 SHEETS | |
|--------------|--------------|---|--|---|---------------------------------|-------------------|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1898.2 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | 2 | | | |
| | | | | | | 2 | | | |
| 1897.2 | 10 | | | | | 2 | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
10.5-12.5 ft.
100% Rec. | | 3 | | | |
| 1896.2 | 11 | | | | | 3 | | | |
| | | | | | | 5 | | | |
| 1895.2 | 12 | | | | | 7 | | | |
| | | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, fine to medium grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | | |
| 1894.2 | 13 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, fine to medium grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | | | |
| | | | | | | | | | |
| 1893.2 | 14 | | | | | | | | |
| | | | | | | | | | |
| 1892.2 | 15 | | | | | | | | |
| | | | | | | | | | |
| 1891.2 | 16 | | | | | | | | |
| | | | | | | | | | |
| 1890.2 | 17 | | | | | | | | |
| | | | | | | | | | |
| 1889.2 | 18 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-LGIA-MW04

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-LGIA-MW04

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|--|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 21B-BPA-LGIA-MW04 | | 4 | | 6 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1889.2 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, fine to medium grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | | | |
| 1888.2 | 19 | | | | | | | | | | |
| 1887.2 | 20 | | | | | | | | | | |
| 1886.2 | 21 | | | | | | | | | | |
| 1885.2 | 22 | | | | | | | | | | |
| 1884.2 | 23 | | | | | | | | | | |
| 1883.2 | 24 | | | | | | | | | | |
| 1882.2 | 25 | | | | | | | | | | |
| 1881.2 | 26 | | | | | | | | | | |
| 1880.2 | 27 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-LGIA-MW04

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-LGIA-MW04

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|--|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 5 | | | | 6 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1880.2 | 27 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, fine to medium grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | | | |
| 1879.2 | 28 | | | | | | | | | | |
| 1878.2 | 29 | | | | | | | | | | |
| 1877.2 | 30 | | | | | | | | | | |
| 1876.2 | 31 | | | | | | | | | | |
| 1875.2 | 32 | | | | | | | | | | |
| 1874.2 | 33 | | | | | | | | | | |
| 1873.2 | 34 | | | | | | | | | | |
| 1872.2 | 35 | | | | | | | | | | |
| 1871.2 | 36 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-LGIA-MW04

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-LGIA-MW04

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|--|--|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | | | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1871.2 | 36 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, fine to medium grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | | | |
| 1870.2 | 37 | | | | | | | | | | |
| 1869.2 | 38 | | | | | | | | | | |
| 1868.2 | 39 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
38.5-40.5 ft.
100% Rec. | | 4 | | | | | |
| | | | | | | 8 | | | | | |
| | | | | | | 11 | | | | | |
| 1867.2 | 40 | (CL) LEAN CLAY (90%): Low to medium
plasticity, medium toughness, medium dry
strength, no dilatancy, slightly moist, fine sand
(10%). (10GY 5/1) | | | | 11 | | | | | |
| 1866.2 | 41 | Bottom of Borehole @ 40.5 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 12-40 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | | | | |
| 1865.2 | 42 | | | | | | | | | | |
| 1864.2 | 43 | | | | | | | | | | |
| 1863.2 | 44 | | | | | | | | | | |
| 1862.2 | 45 | | | | | | | | | | |

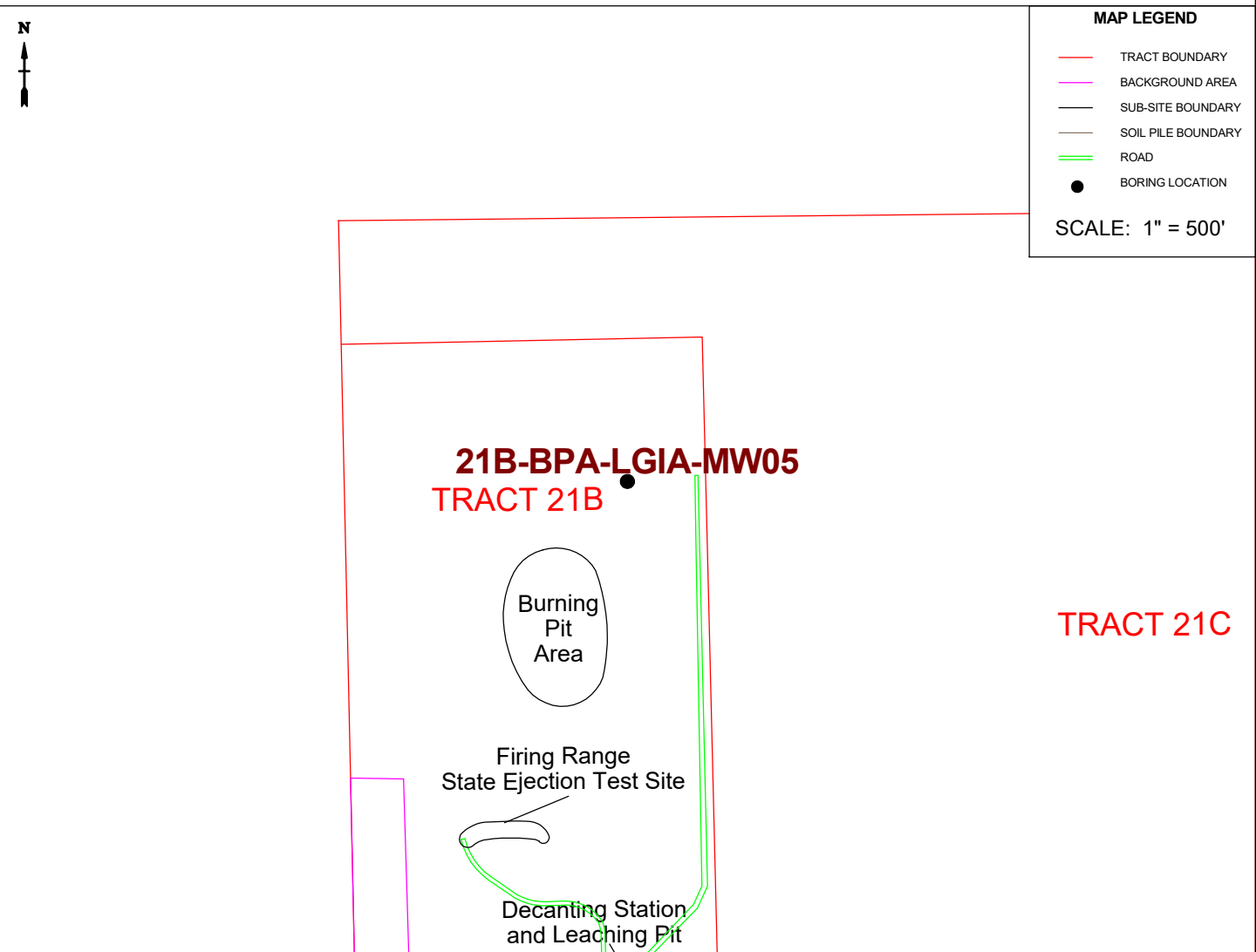
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-LGIA-MW04

| | | | | | |
|--|-------------------|---|---------------------------------------|----------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-BPA-LGIA-MW05 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET 1 OF 6 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
405826.3 North 2048815.4 East | | | |
| | | 9. SURFACE ELEVATION
1907.7' MSL | | | |
| | | 10. DATE STARTED
5/17/2018 | 11. DATE COMPLETED
5/17/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
12 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
13.53 ft on 5/18/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
41.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
10.22 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-LGIA-MW05

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|---|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 2 | | OF | | 6 | | SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1907.7 | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery | | | | |
| 1906.7 | 1 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | | | | | |
| 1905.7 | 2 | | | | | | | | | | |
| 1904.7 | 3 | | | | | | | | | | |
| 1903.7 | 4 | | | | | | | | | | |
| 1902.7 | 5 | | | | | | | | | | |
| 1901.7 | 6 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | | | | | |
| 1900.7 | 7 | | | | | | | | | | |
| 1899.7 | 8 | | | | | | | | | | |
| | | *See Next Page | | | | | | | | | |
| 1898.7 | 9 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-LGIA-MW05

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-LGIA-MW05

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1898.7 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | | |
| 1897.7 | 10 | | | | | | |
| 1896.7 | 11 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
10.5-12.5 ft.
100% Rec. | | 4 | |
| | | | | | | 5 | |
| | | | | | | 5 | |
| 1895.7 | 12 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, fine to medium grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | 7 | |
| 1894.7 | 13 | | | | | | |
| 1893.7 | 14 | | | | | | |
| 1892.7 | 15 | | | | | | |
| 1891.7 | 16 | | | | | | |
| 1890.7 | 17 | | | | | | |
| 1889.7 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-LGIA-MW05

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-LGIA-MW05

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 4 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1889.7 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, fine to medium grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
18.5-20.5 ft.
100% Rec. | | | |
| | | | | | | 3 | |
| 1888.7 | 19 | | | | | 4 | |
| | | | | | | 5 | |
| 1887.7 | 20 | | | | | 6 | |
| | | | | | | | |
| 1886.7 | 21 | | | | | | |
| | | | | | | | |
| 1885.7 | 22 | | | | | | |
| | | | | | | | |
| 1884.7 | 23 | | | | | | |
| | | | | | | | |
| 1883.7 | 24 | | | | | | |
| | | | | | | | |
| 1882.7 | 25 | | | | | | |
| | | | | | | | |
| 1881.7 | 26 | | | | | | |
| | | | | | | | |
| 1880.7 | 27 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-LGIA-MW05

HTRW DRILLING LOG

S. Cameron

HOLE NUMBER
21B-BPA-LGIA-MW05

SHEET 5 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|-----------------------------------|--|---------------------------------|-------------------|----------------|
| 1880.7 | 27 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, fine to medium grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | |
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| 1879.7 | 28 | | | | | | |
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| HOLE NO | 21B-BPA-LGIA-MW05 |
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(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


21B-BPA-LGIA-MW05

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 6 OF 6 SHEETS | |
|--------------|--------------|--|--|--|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1871.7 | 36 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, fine to medium grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | |
| 1870.7 | 37 | | | | | | | | |
| 1869.7 | 38 | | | | | | | | |
| 1868.7 | 39 | | | | | | | | |
| 1867.7 | 40 | | | | | | | | |
| 1866.7 | 41 | (MH) ELASTIC SILT (95%): Low plasticity, low
toughness, low dry strength, no dilatancy, very
slightly moist, fine sand (5 %). (10Y 4/1) | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
38-40 ft.
100% Rec. | | 7 | | |
| | | | | | | | 8 | | |
| | | | | | | | 7 | | |
| | | | | | | | 9 | | |
| | | | | | | | | | |
| | | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
40-42 ft.
100% Rec. | | 5 | | |
| | | | | | | | 7 | | |
| | | | | | | | 8 | | |
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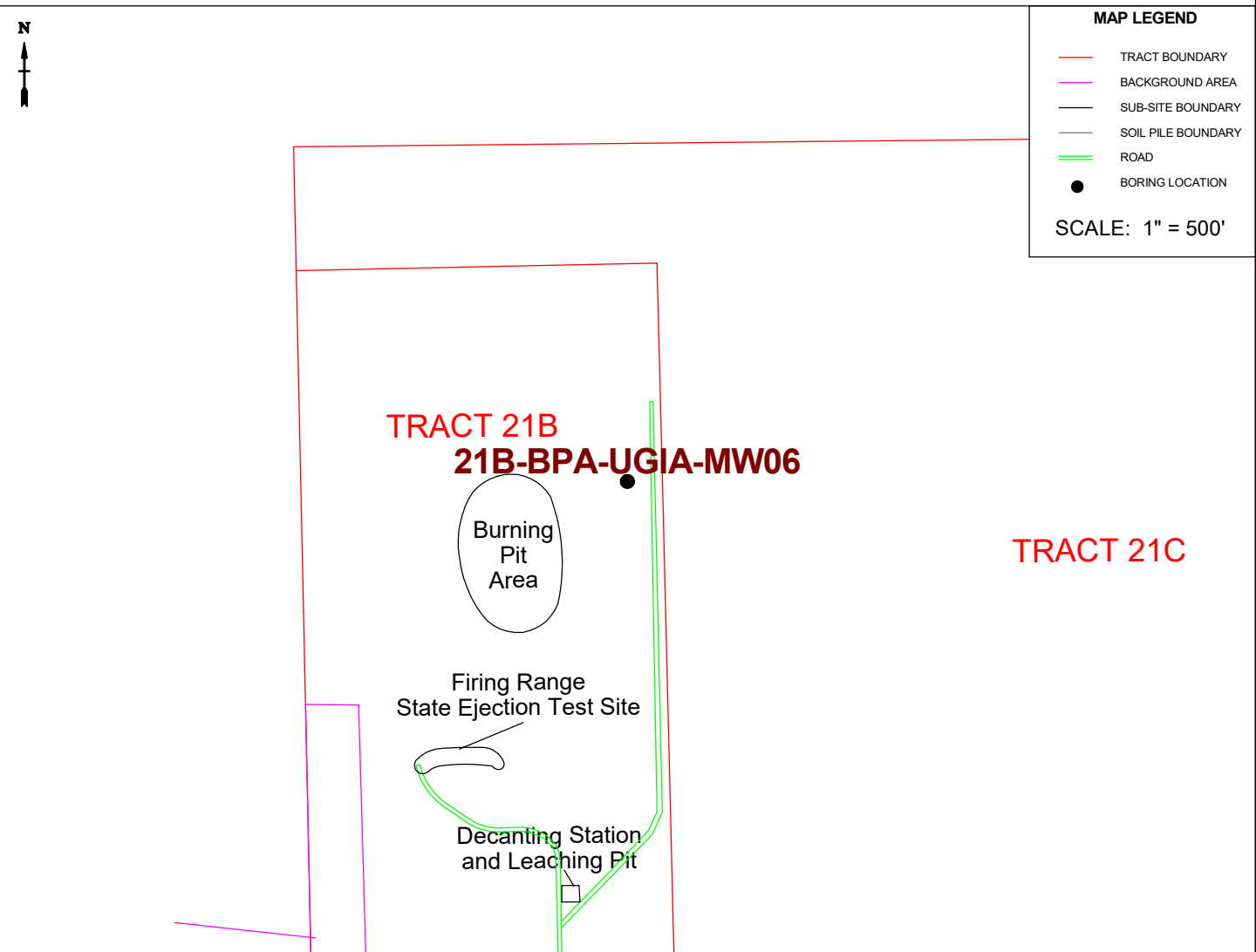
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-LGIA-MW05

| | | | | | |
|--|-------------------|---|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-BPA-UGIA-MW06 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET 1 OF 4 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
405605.9 North 2048949.9 East | | | |
| | | 9. SURFACE ELEVATION
1907.8' MSL | | | |
| | | 10. DATE STARTED
5/16/2018 | 11. DATE COMPLETED
5/17/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
12 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
13.89 ft on 5/17/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
20.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
10.65 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-UGIA-MW06

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-UGIA-MW06

| PROJECT | CHAAP, Grand Island, Nebraska | DISTRICT | US Army Corps of Engineers - Omaha District | | | | SHEET 2 OF 4 SHEETS |
|--------------|-------------------------------|---|---|--|---------------------------------|-------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1907.8 | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1906.8 | 1 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | | |
| 1905.8 | 2 | | | | | | |
| 1904.8 | 3 | | | | | | |
| 1903.8 | 4 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3.5-5.5 ft.
100% Rec. | | 2 | |
| 1902.8 | 5 | | | | | 3 | |
| 1901.8 | 6 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | | | | 4 | |
| 1900.8 | 7 | | | | | | |
| 1899.8 | 8 | | | | | | |
| 1898.8 | 9 | *See Next Page | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
8.5-10.5 ft.
100% Rec. | | 2 | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-UGIA-MW06

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-UGIA-MW06

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 3 OF 4 SHEETS | |
|--------------|--------------|---|--|--|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1898.8 | 9 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) (continued) | | | | | 2 | | |
| | | | | | | | 3 | | |
| 1897.8 | 10 | | | | | | 3 | | |
| | | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
10.5-12.5 ft.
100% Rec. | | 3 | | |
| 1896.8 | 11 | (SW) WELL GRADED CLEAN SAND (90%): Poorly sorted, fine to medium grained, sub-angular to sub-rounded, loose, wet, less than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | 3 | | |
| | | | | | | | 4 | | |
| | | | | | | | 6 | | |
| 1895.8 | 12 | | | | | | | | |
| | | | | | | | | | |
| 1894.8 | 13 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 1893.8 | 14 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 1892.8 | 15 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 1891.8 | 16 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 1890.8 | 17 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 1889.8 | 18 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-UGIA-MW06

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-UGIA-MW06

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 4 OF 4 SHEETS | |
|--------------|--------------|---|--|-----------------------------------|--|---|---------------------------------|---------------------|----------------|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1889.8 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, fine to medium grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | |
| 1888.8 | 19 | | | | | | | | |
| 1887.8 | 20 | | | | | | | | |
| 1886.8 | 21 | Bottom of Borehole @ 20.5 ft
10 Gallons of Water Lost During Drilling
Heaving Sands12-20.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | |
| 1885.8 | 22 | | | | | | | | |
| 1884.8 | 23 | | | | | | | | |
| 1883.8 | 24 | | | | | | | | |
| 1882.8 | 25 | | | | | | | | |
| 1881.8 | 26 | | | | | | | | |
| 1880.8 | 27 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-UGIA-MW06

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>21B-BPA-UGSA-mw07</i> | |
|---|--|------------------------|--|--|--|--|--|
| 1 COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2 DRILLING CONTRACTOR
<i>GSJ Engineering</i> | | SHEET 1 OF <i>34</i>
<i>AH</i> | |
| 3 PROJECT
<i>CHAAP RIFS</i> | | | | 4 LOCATION
<i>Grand Island, NE CHAAP</i> | | | |
| 5 NAME OF DRILLER
<i>S. Jinnell</i> | | | | 6 MANUFACTURER'S DESIGNATION OF DRILL
<i>CME - SS</i> | | | |
| 7 SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>4.25" HSA</i>
<i>~ 2' x 4" SP</i> | | | | 8 HOLE LOCATION
<i>UGSA-mw07</i> | | | |
| | | | | 9 SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10 DATE STARTED
<i>4.3.18</i> | | 11 DATE COMPLETED
<i>4.3.18</i> | |
| 12 OVERBURDEN THICKNESS
<i>NA</i> | | | | 15 DEPTH GROUNDWATER ENCOUNTERED
<i>~12' bgs</i> | | | |
| 13 DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16 DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14 TOTAL DEPTH OF HOLE | | | | 17 OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18 GEOTECHNICAL SAMPLES
<i>NA</i> | | DISTURBED
<i>—</i> | | UNDISTURBED
<i>—</i> | | 19 TOTAL NUMBER OF CORE BOXES
<i>NA</i> | |
| 20 SAMPLES FOR CHEMICAL ANALYSIS
<i>NA</i> | | VOC
<i>—</i> | | METALS
<i>—</i> | | OTHER (SPECIFY)
<i>—</i> | |
| | | | | | | 21 TOTAL CORE
<i>NA</i> % | |
| 22 DISPOSITION OF HOLE
<i>MW Install</i> | | BACKFILLED
<i>—</i> | | MONITORING WELL
<i>X</i> | | 23 SIGNATURE OF INSPECTOR
<i>D. Hedgepeth</i> | |
| LOCATION SKETCH/COMMENTS | | | | SCALE: <i>not to scale</i> | | | |
| | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>21B-BPA-UGSA-mw07</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|------------------------|---|---------------------------------|------------------------------|---|
| PROJECT | | | INSPECTOR | | | SHEET OF SHEETS | |
| CHAAP RIFS | | | A. Hedgecock | | | 21B-BPA-UGJA-MLO7
2 OF 34 | |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 4.3.18
1355 | | Top soil | PID | | | | 4.25" HSA-Blind
Drill based off
log from
21B-BPA-UGJA-MLO7
- This log is copied
over for clarity |
| | 1 | | | | | | |
| | 2 | | | | | | |
| | 3 | Lean Clay w Tr. F. Sand
(CL) Soft to m. Soft, m.
Plastic, Fe stain w/ mottled
moist, olive gray (Sr 5/2) | O.D | NA | 50% | 3
5
6 | |
| | 4 | (95% Fines, 5% F. Sand) | | | | | |
| | 5 | Blind Drill | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |
| PROJECT CHAAP RIFS | | | | | | HOLE NO
21B-BPA-UGJA-MLO7 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | HOLE NUMBER
21B-BPA-UGSA-MW07 | |
|--|--------------|--|-------------------------------|--|---------------------------------|----------------------------------|----------------|
| PROJECT
CHAAP RSES | | | INSPECTOR
A. Hodge | | | SHEET 3 OF 4 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PSD
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | Blind Drill | | | recog | | |
| | 8 | Same as above w/
increasing F. Sand | 0.0 | CL | 100% | 1
2
3 | |
| | 9 | | | | | | |
| | 10 | Same as above, becoming
more moist w/ color
change to Dark gray
(2.5y 4/1), soft | 0.0 | CL | 100% | 3
3
3 | |
| | 11 | | | | | | |
| | 12 | Poorly Graded Sand w/
Few Fines (SP) (90% F. Sand,
10% Fines), (Gray Sy 5/1)
m. dense, wet, non plastic,
non cohesive, Sub angular,
Sub rounded | 0.0 | SP | 90% | 6
9
17 | |
| | 13 | | | | | | |
| | 14 | Blind Drill | | NA | NA | | |

PROJECT
CHAAP RSES

ENG FORM 5056A-R, AUG 94

HOLE NO
21B-BPA-UGSA-MW07

(Proponent: CECW-EG)

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

ZIB-BPA-UGIA-mw07

PROJECT

CHAAP RIFS

INSPECTOR

A. Hechinger

SHEET

SHEETS

1 OF 1

| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|-------------|--------------|--|------------------------|---|--------------------------------|-------------------|----------------|
| | | Same as above / previous
Page | PSD | | 1 recovery | | |
| | | Blind Drill | | NA | NA | NA | |
| | 15 | | | | | | |
| | 16 | | | | | | |
| | 17 | | | | | | |
| | 18 | | | | | | |
| | 19 | WG Sand w Tr Fines
95% Sand (F to M) + 5% Fines
m. dense, noncohesive, wet,
non plastic, sub angular,
sub rounded, gray (S _y , S _i) | 0.0 | SW | 40% | 8
10
6 | |
| | 20 | Bottom of borehole at 20'
10' - 20' bgs based off
ZIB-BPA-UGIA-mw08
TD BGS, Well Screen from
WL / Inter-face from
boring on 4.3.18 | | | | | |

PROJECT

CHAAP RIFS

HOLE NO

ZIB-BPA-UGIA-mw07

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>21B-BPA-LGSA-MW08</i> | |
|---|--|---|--|--|--|--|--|
| 1 COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2 DRILLING CONTRACTOR
<i>GSI Engineering</i> | | SHEET
1 OF 7 | |
| 3 PROJECT
<i>CHAAP RIFS</i> | | | | 4 LOCATION
<i>Grand Island, NE, CHAAP</i> | | | |
| 5 NAME OF DRILLER
<i>J. Tinnel - GSI</i> | | | | 6 MANUFACTURER'S DESIGNATION OF DRILL
<i>CME-SS</i> | | | |
| 7 SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT | | <i>4.25" HSA</i>
<i>4' x 2" Split spoon</i> | | 8 HOLE LOCATION
<i>LGSA - MW08</i> | | 9 SURFACE ELEVATION
<i>NA</i> | |
| 12 OVERBURDEN THICKNESS
<i>NA</i> | | | | 10 DATE STARTED
<i>4.3.18</i> | | 11 DATE COMPLETED
<i>4.3.18</i> | |
| 13 DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 15 DEPTH GROUNDWATER ENCOUNTERED
<i>~12' bgs</i> | | | |
| 14 TOTAL DEPTH OF HOLE | | | | 16 DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 17 OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | | | | | |
| 18. GEOTECHNICAL SAMPLES
<i>NA</i> | | DISTURBED
<i>NA</i> | | UNDISTURBED
<i>NA</i> | | 19 TOTAL NUMBER OF CORE BOXES
<i>NA</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC
<i>-</i> | | METALS
<i>-</i> | | OTHER (SPECIFY)
<i>-</i> | |
| 21. TOTAL CORE
<i>NA</i> % | | BACKFILLED
<i>-</i> | | MONITORING WELL
<i>X</i> | | OTHER (SPECIFY)
<i>-</i> | |
| 22. DISPOSITION OF HOLE
<i>MW Install/SB</i> | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepeth</i> | | | | | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="display: flex; justify-content: space-between;"> <div> </div> <div> <p>SCALE: <i>not to scale</i></p> </div> </div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>21B-BPA-LGSA-MW08</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | HOLE NUMBER
21B-BPA-LGSA-11108 | |
|--|--------------|--|-------------------------------|---|--------------------------------|-----------------------------------|-----------------|
| PROJECT
CHAAP RIFS | | | INSPECTOR
A. Hedgecock | | | SHEET 2 OF 7 | |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 4.3.18
1000 | | Topsoil | | | Recovery | | 4.25" HSA w/ |
| | | Blind Drill | | NA | NA | NA | 2' SP every |
| | 1 | | | | | | 5', starting at |
| | 2 | | | | | | 3'. |
| | 3 | Lean clay w Tr. Fine
Sand (LL), soft to
m. soft, m. plastic, Tr
Fe stain/mottled, moist | 0.0 | | 50% | 3
5
6 | |
| | 4 | Olive Gray (SY S/2)
95% Fine, 5% F. Sand | | | | | |
| | 5 | Blind Drill | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO
21B-BPA-LGSA-11108

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

21B-BPA-LGIA-MW08

PROJECT

CHAAP RIFS

INSPECTOR

A. Hedgcock

SHEET

SHEETS

3

OF 7

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|------------------------|---|--------------------------------|-------------------|----------------|
| | | Blind Drill | NS | | recd | | |
| 9 | | Same as above w/
increasing F. Sand | 0.0 | CL | 100 | 1
2
3 | |
| 10 | | Same as above moving
to wet and color
change to Dark gray
(2.5y 4/1) + soft, moist | 0.0 | CL | 100 | 3
3
3 | |
| 12 | | Poorly Graded (SP)
Sand w Some Fines
90% F. Sand, 10% Fines
(Gray Sy 5/1), m. dense,
Wet, non plastic, non
cohesive, sub angular,
sub rounded | 0.0 | SP | 90% | 6
9
17 | |
| 14 | | Blind Drill | | NA | NA | | |

PROJECT

CHAAP RIFS

HOLE NO

21B-BPA-LGIA-MW08

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|--|------------------------|---|---------------------------------|--------------------|----------------|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHADP RSES | | | D. HEDGECOCK | | | 4 OF 7 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEO TECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | Continued from previous page | | | | | |
| | | Blind Drill | | | | 8
10
12 | |
| | 15 | | | | | | |
| | 16 | | | | | | |
| | 17 | | | | | | |
| | 18 | | | | | | |
| | 19 | Well Graded Sand
w/ Tr. Fines (95% Sand
Fine to med, 5% Fines)
m. dense, non cohesive, wet,
non-plastic, sub angular,
sub rounded, (gray s/s) | 0.0 | SW | 40 | 8
10
6
10 | |
| | 20 | | | | | | |
| | 21 | Blind Drill | | | | | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | HOLE NUMBER
21B-BPA-LGIA-m-08 | |
|--|--------------|---|---------------------------|--|---------------------------------|----------------------------------|----------------|
| PROJECT
CHAAP RIFS | | | INSPECTOR
M. Hedgecock | | | SHEET 5 OF 7 SHEETS | |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | Blind Drill | | | | | |
| | 22 | | | | | | |
| | 23 | | | | | | |
| | 24 | Same as above w/
increasing m. grain
Sand. | 0.0 | SW | 40 | 3
7
10
7 | |
| | 25 | w/ 2" clay lens (CL)
Stiff, wet, m. plastic
D. greenish gray (Gley' A/10) | | | | | |
| | 26 | Blind Drill | | | | | |
| | 27 | | | | | | |
| | 28 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO 21B-BPA-LGSA-m-08


| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|--|------------------------|---|--------------------------------|-------------------|----------------|
| PROJECT | | | | INSPECTOR | | | SHEET |
| CHAAP RIFS | | | | A. Hodgson | | | 6 OF 7 |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | Blind Drill | | | recony | | |
| | | Same as above w/
no clay lens | 0.0 | SW | 50% | 3
7
10
9 | |
| | | Blind Drill | | NA | NA | NA | |
| | | Same as above with
1" CL clean clay
lens (95% fines, 5% F
sw), stiff, wet, m. plastic,
(2.5 y 411) Dark gray,
sharp transition back
w/ 40% F. gravel
hill gravel sand w gravel
non cohesive sub angular
sub rounded | 0.0 | SW | 50% | 4
8
8
10 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|------------------------|---|---------------------------------|----------------------|----------------|
| PROJECT | | | | INSPECTOR | | | SHEET |
| CHAAP - RIFS | | | | A. Hedgepeth | | | 7 OF 7 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | recovered | | |
| | | Blind Drill | | NA | NA | NA | |
| | 36 | | | | | | |
| | 37 | | | | | | |
| | 38 | Note - Driller felt transition
at 38.5 - 39' bgs | | | | | |
| | 39 | Lean Clay w/ F. Sand
(95% Fines, 5% F. Sand)
Low plastic, moist, stiff
(5 gy 4/2) Dark greyish green | 0.0 | CL | 80% | 10
18
16
13 | |
| | 40 | | | | | | |
| 1140
4.2.18 | | End of boring at 40.5' bgs
- will be backfilled to 38.5' w/ mm
Install from 28.5' - 38.5' bgs | | | | | |
| | 41 | | | | | | |
| | 42 | | | | | | |
| | | | | | | | |

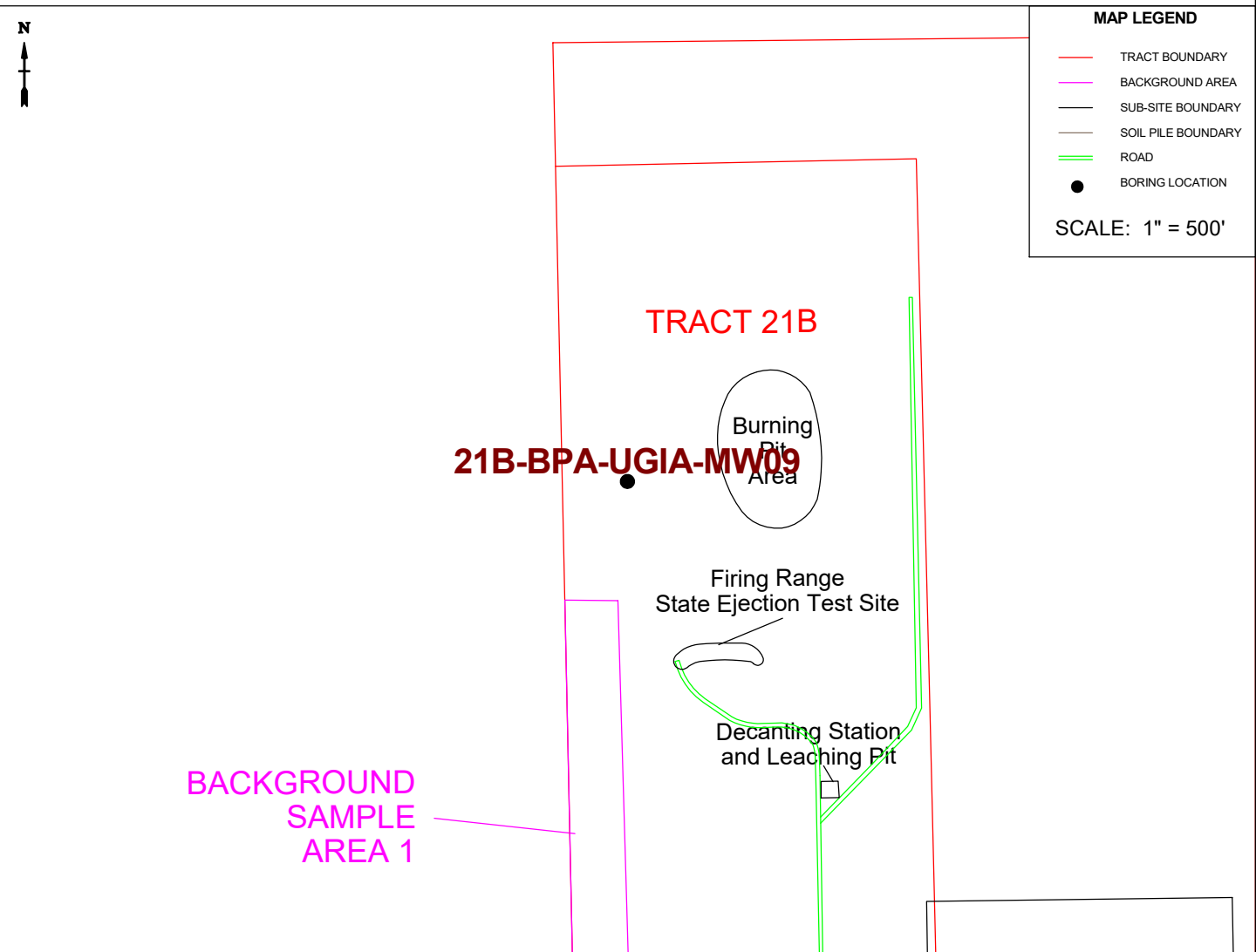
PROJECT CHAAP RIFS

HOLE NO 213-BPA-LGSA-MW08

| | | | | | |
|--|-------------------|---|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-BPA-UGIA-MW09 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET 1 OF 4 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Mobile 57 | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
405294.3 North 2048175.9 East | | | |
| | | 9. SURFACE ELEVATION
1907.9' MSL | | | |
| | | 10. DATE STARTED
7/20/2018 | | 11. DATE COMPLETED
7/20/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
10.98 ft on 7/21/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
21.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
11.23 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



| | |
|--|------------------------------|
| PROJECT CHAAP Grand Island, Nebraska | HOLE NO 21B-BPA-UGIA-MW09 |
|--|------------------------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-UGIA-MW09

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 2 OF 4 SHEETS | |
|--------------|--------------|---|--|--|--|---|-------------------|---|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1907.9 | 0 | Topsoil | | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery | |
| 1906.9 | 1 | | | | | | | | |
| 1905.9 | 2 | | | | | | | | |
| 1904.9 | 3 | | | | | | | | |
| 1903.9 | 4 | (CL) LEAN CLAY (87%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%), cream colored friable gravel-sized clasts (1%). (2.5Y 6/2) | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3.5-5.5 ft.
100% Rec. | | 4 | | |
| 1902.9 | 5 | | | | | | 3 | | |
| 1901.9 | 6 | | | | | | 3 | | |
| 1900.9 | 7 | Same as above with increased plasticity and moisture. (2.5Y 3/1) | | | | | | | |
| 1899.9 | 8 | | | | | | | | |
| 1898.9 | 9 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
8.5-10.5 ft.
100% Rec. | | 2 | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-UGIA-MW09

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-UGIA-MW09

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 3 OF 4 SHEETS | |
|--------------|--------------|---|--|--|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1898.9 | 9 | Same as above with increased plasticity and moisture. (2.5Y 3/1) (continued) | | | | | 1 | | |
| | 3 | | | | | | | | |
| 1897.9 | 10 | | | | | | 2 | | |
| | | Same as above becoming wet. | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
10.5-12.5 ft.
100% Rec. | | 3 | | |
| 1896.9 | 11 | | | | | | 2 | | |
| | | | | | | | 3 | | |
| 1895.9 | 12 | (MH) ELASTIC SILT (93%): Low plasticity, low toughness, low dry strength, no dilatancy, wet, fine sand (5 %), black fine organic clast (2%). (2.5Y 4/1) | | | | | 3 | | |
| | | | | | | | 6 | | |
| 1894.9 | 13 | | | | | | 7 | | |
| | | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | | 10 | | |
| 1893.9 | 14 | | | | | | 10 | | |
| | | | | | | | | | |
| 1892.9 | 15 | | | | | | | | |
| | | | | | | | | | |
| 1891.9 | 16 | | | | | | | | |
| | | | | | | | | | |
| 1890.9 | 17 | | | | | | | | |
| | | | | | | | | | |
| 1889.9 | 18 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-UGIA-MW09

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-UGIA-MW09

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 4 | | OF | | 4 | | SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1889.9 | 18 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | | | | | | | | |
| | | | | | | 8 | | | | | |
| 1888.9 | 19 | | | | | | 10 | | | | |
| | | | | | | | 11 | | | | |
| 1887.9 | 20 | | | | | | | | | | |
| | | | | | | 11 | | | | | |
| 1886.9 | 21 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1885.9 | 22 | Bottom of Borehole @ 21.5 ft
10 Gallons of Water Lost During Drilling
Heaving Sands13-21.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | | | |
| | | | | | | | | | | | |
| 1884.9 | 23 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1883.9 | 24 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1882.9 | 25 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1881.9 | 26 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1880.9 | 27 | | | | | | | | | | |

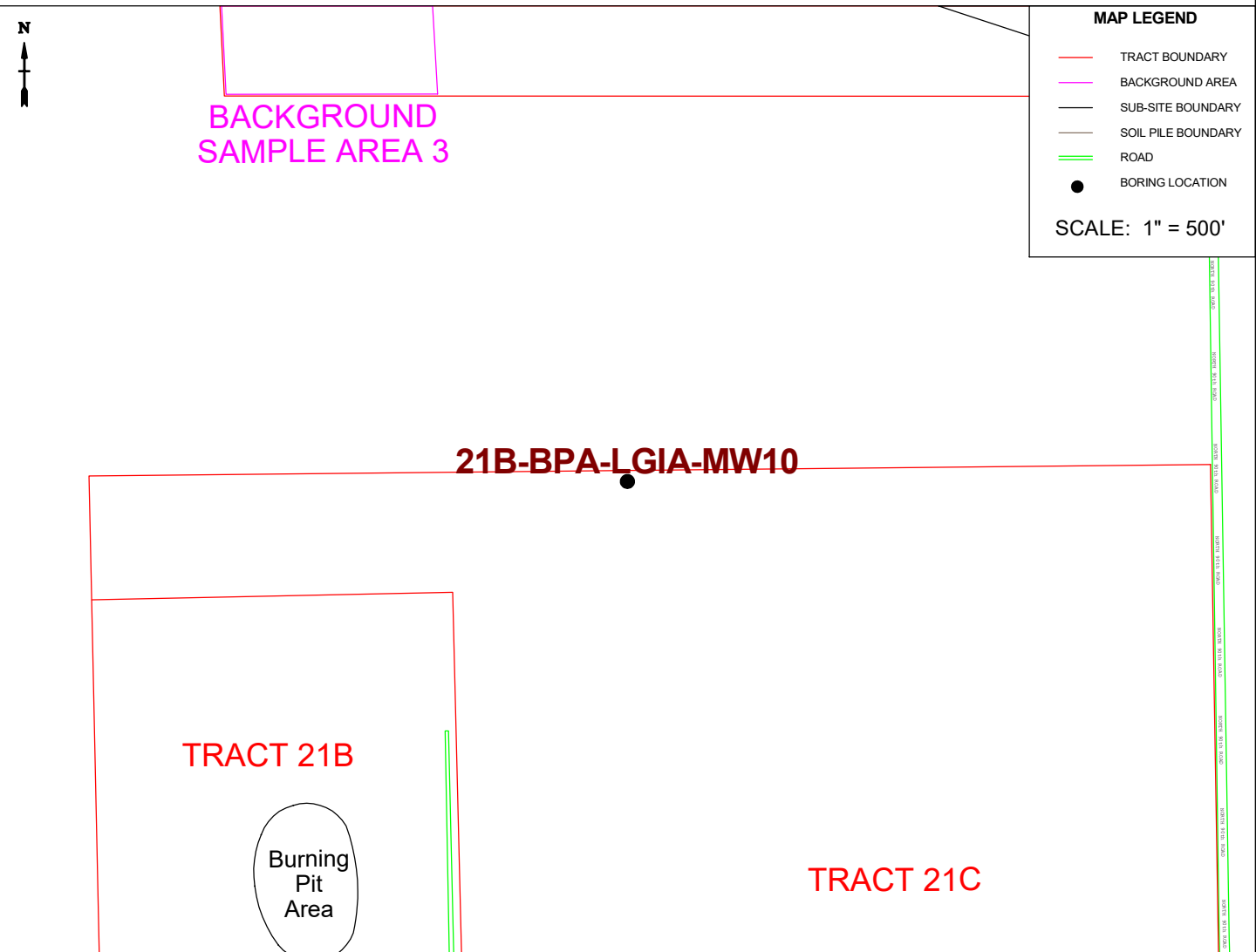
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-UGIA-MW09

| | | | | | |
|--|-------------------|---|---------------------------------------|----------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-BPA-LGIA-MW10 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 7 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Mobile 57 | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
406589.1 North 2049560.5 East | | | |
| | | 9. SURFACE ELEVATION
1906.3' MSL | | | |
| | | 10. DATE STARTED
7/17/2018 | 11. DATE COMPLETED
7/17/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
10.86 ft on 7/18/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
45.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
10.45 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-LGIA-MW10

| PROJECT | CHAAP, Grand Island, Nebraska | DISTRICT | US Army Corps of Engineers - Omaha District | | | | SHEET 2 OF 7 SHEETS | |
|--------------|-------------------------------|---|---|--|---------------------------------|-------------------|--|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1906.3 | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery | |
| 1905.3 | 1 | (CL) LEAN CLAY (88%): Low to medium plasticity, high dry strength, medium toughness, 10% fine sand, no dilatancy, wet iron-stained coarse-sand sized clasts (2%). (5YR 4/2) | | | | | | |
| 1904.3 | 2 | | | | | | | |
| 1903.3 | 3 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3-5 ft.
100% Rec. | | 2 | | |
| | | | | | | 2 | | |
| 1902.3 | 4 | | | | | 3 | | |
| | | | | | | 4 | | |
| 1901.3 | 5 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
5-7 ft.
100% Rec. | | 3 | | |
| | | | | | | 2 | | |
| 1900.3 | 6 | | | | | 3 | | |
| | | | | | | 5 | | |
| 1899.3 | 7 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
7-9 ft.
100% Rec. | | 3 | | |
| | | | | | | 3 | | |
| 1898.3 | 8 | Same as above becoming Moist. | | | | 3 | | |
| | | | | | | 5 | | |
| 1897.3 | 9 | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-LGIA-MW10

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-LGIA-MW10

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | | SHEET 3 OF 7 SHEETS | |
|--------------|--------------|--|--|---|---------------------------------|-------------------|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1897.3 | 9 | Same as above becoming Moist. (continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
9-11 ft.
100% Rec. | | 5 | | | |
| | | | | | | 4 | | | |
| 1896.3 | 10 | | | | | 5 | | | |
| | | | | | | 5 | | | |
| 1895.3 | 11 | | | | | 6 | | | |
| | | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
11-13 ft.
100% Rec. | | 6 | | | |
| | | | | | | 6 | | | |
| 1894.3 | 12 | | | | | 7 | | | |
| | | | | | | 8 | | | |
| 1893.3 | 13 | | | | | | | | |
| | | | | | | | | | |
| 1892.3 | 14 | | | | | | | | |
| | | | | | | | | | |
| 1891.3 | 15 | | | | | | | | |
| | | | | | | | | | |
| 1890.3 | 16 | | | | | | | | |
| | | | | | | | | | |
| 1889.3 | 17 | | | | | | | | |
| | | | | | | | | | |
| 1888.3 | 18 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-LGIA-MW10

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-LGIA-MW10

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | | SHEET 4 OF 7 SHEETS | |
|--------------|--------------|---|--|---|---------------------------------|-------------------|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1888.3 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
18-20 ft.
100% Rec. | | 5 | | | |
| | 7 | | | | | | | | |
| 1887.3 | 19 | | | | | 6 | | | |
| | | | | | | 9 | | | |
| 1886.3 | 20 | | | | | | | | |
| | | | | | | | | | |
| 1885.3 | 21 | | | | | | | | |
| | | | | | | | | | |
| 1884.3 | 22 | | | | | | | | |
| | | | | | | | | | |
| 1883.3 | 23 | | | | | | | | |
| | | | | | | 5 | | | |
| | | | | | | 7 | | | |
| 1882.3 | 24 | | | | | 8 | | | |
| | | | | | | 8 | | | |
| 1881.3 | 25 | | | | | | | | |
| | | | | | | | | | |
| 1880.3 | 26 | | | | | | | | |
| | | | | | | | | | |
| 1879.3 | 27 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-LGIA-MW10

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-LGIA-MW10

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 5 OF 7 SHEETS | |
|--------------|--------------|---|--|--|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1879.3 | 27 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | |
| 1878.3 | 28 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 8
28-30 ft.
100% Rec. | | 6 | | |
| | | | | | | | 7 | | |
| 1877.3 | 29 | | | | | | 5 | | |
| | | | | | | | 7 | | |
| 1876.3 | 30 | | | | | | | | |
| 1875.3 | 31 | | | | | | | | |
| 1874.3 | 32 | | | | | | | | |
| 1873.3 | 33 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 9
33-35 ft.
100% Rec. | | 8 | | |
| | | | | | | | 9 | | |
| 1872.3 | 34 | | | | | | 9 | | |
| | | | | | | | 10 | | |
| 1871.3 | 35 | | | | | | | | |
| 1870.3 | 36 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-LGIA-MW10

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-LGIA-MW10

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 6 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1870.3 | 36 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, medium to very coarse grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | |
| 1869.3 | 37 | | | | | | |
| 1868.3 | 38 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 10
38-40 ft.
100% Rec. | | 6 | |
| 1867.3 | 39 | | | | | 6
8
7 | |
| 1866.3 | 40 | | | | | | |
| 1865.3 | 41 | | | | | | |
| 1864.3 | 42 | | | | | | |
| 1863.3 | 43 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 11
43-45 ft.
100% Rec. | | 6 | |
| 1862.3 | 44 | | | | | 8
9 | |
| 1861.3 | 45 | (CL) LEAN CLAY (95%): Low to medium
plasticity, medium toughness, medium dry
strength, no dilatancy, moist, fine sand (5%). | | | | 8 | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-LGIA-MW10

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


21B-BPA-LGIA-MW10

| PROJECT | | DISTRICT | | SHEET | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 7 | | | 7 | | 7 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| 1861.3 | 45 | Bottom of Borehole @ 45 ft
100 Gallons of Water Lost During Drilling
Heaving Sands11-44.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | | | |
| 1860.3 | 46 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1859.3 | 47 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1858.3 | 48 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1857.3 | 49 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1856.3 | 50 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1855.3 | 51 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1854.3 | 52 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1853.3 | 53 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1852.3 | 54 | | | | | | | | | |

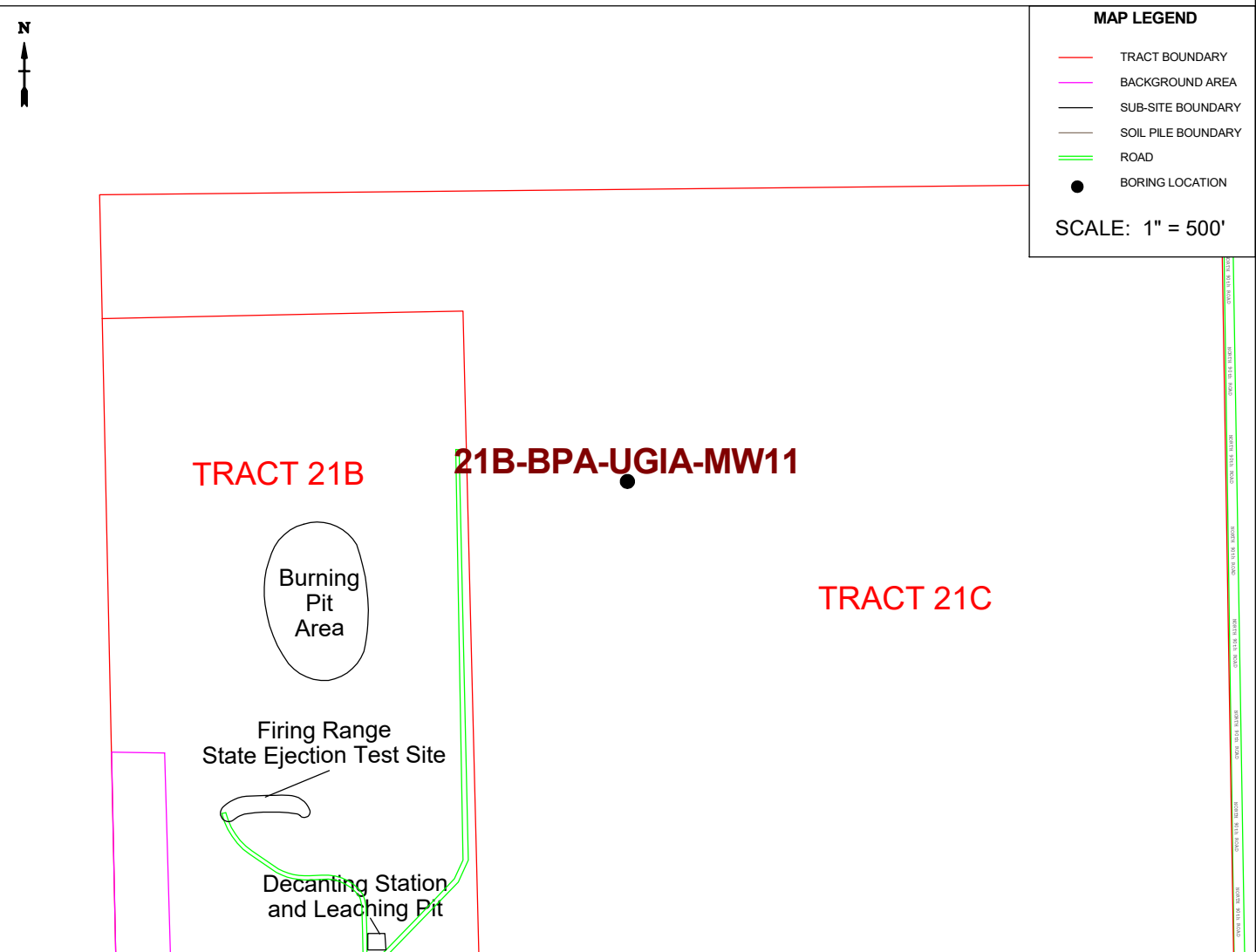
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-LGIA-MW10

| | | | | | |
|--|-------------------|---|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-BPA-UGIA-MW11 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Mobile 57 | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
405748.9 North 2049529.2 East | | | |
| | | 9. SURFACE ELEVATION
1908.0' MSL | | | |
| | | 10. DATE STARTED
7/21/2018 | 11. DATE COMPLETED
7/21/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
11.86 ft on 7/22/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
19.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
12.27 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-UGIA-MW11

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | SHEET 2 OF 4 SHEETS | |
|--------------|--------------|---|--|---|---------------------------------|-------------------|---|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1908.0 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery | |
| 1907.0 | 1 | | | | | | | |
| 1906.0 | 2 | | | | | | | |
| 1905.0 | 3 | | | | | | | |
| 1904.0 | 4 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3.5-5.5 ft.
100% Rec. | | 3 | | |
| | | (CL) LEAN CLAY (87%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%), cream colored friable gravel-sized clasts (1%). (2.5Y 6/2) | | | | 3 | | |
| 1903.0 | 5 | | | | | 2 | | |
| | | | | | | 3 | | |
| 1902.0 | 6 | | | | | | | |
| | | Same as above with increased plasticity and moisture. (2.5Y 3/1) | | | | | | |
| 1901.0 | 7 | | | | | | | |
| 1900.0 | 8 | | | | | | | |
| | | | | | | | | |
| 1899.0 | 9 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
8.5-10.5 ft.
100% Rec. | | 1 | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-UGIA-MW11

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-UGIA-MW11

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 3 OF 4 SHEETS | |
|--------------|--------------|---|--|--|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1899.0 | 9 | Same as above with increased plasticity and moisture. (2.5Y 3/1) (continued) | | | | | 2 | | |
| | | | | | | | 1 | | |
| 1898.0 | 10 | | | | | | 1 | | |
| | | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
10.5-12.5 ft.
100% Rec. | | 5 | | |
| 1897.0 | 11 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | | 7 | | |
| | | | | | | | 6 | | |
| 1896.0 | 12 | | | | | | 7 | | |
| | | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
12.5-14.5 ft.
100% Rec. | | 6 | | |
| 1895.0 | 13 | | | | | | 6 | | |
| | | | | | | | 7 | | |
| 1894.0 | 14 | | | | | | 7 | | |
| | | | | | | | | | |
| 1893.0 | 15 | | | | | | | | |
| | | | | | | | | | |
| 1892.0 | 16 | | | | | | | | |
| | | | | | | | | | |
| 1891.0 | 17 | | | | | | | | |
| | | | | | | | | | |
| | | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
17.5-19.5 ft.
100% Rec. | | 8 | | |
| 1890.0 | 18 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-UGIA-MW11

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


21B-BPA-UGIA-MW11

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | | SHEET 4 OF 4 SHEETS | |
|--------------|--------------|---|-----------------------------------|---|---------------------------------|-------------------|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1890.0 | 18 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | 7 | | | |
| | | | | | | 6 | | | |
| 1889.0 | 19 | | | | | 9 | | | |
| 1888.0 | 20 | Bottom of Borehole @ 19.5 ft
10 Gallons of Water Lost During Drilling
Heaving Sands11-19.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | |
| 1887.0 | 21 | | | | | | | | |
| 1886.0 | 22 | | | | | | | | |
| 1885.0 | 23 | | | | | | | | |
| 1884.0 | 24 | | | | | | | | |
| 1883.0 | 25 | | | | | | | | |
| 1882.0 | 26 | | | | | | | | |
| 1881.0 | 27 | | | | | | | | |

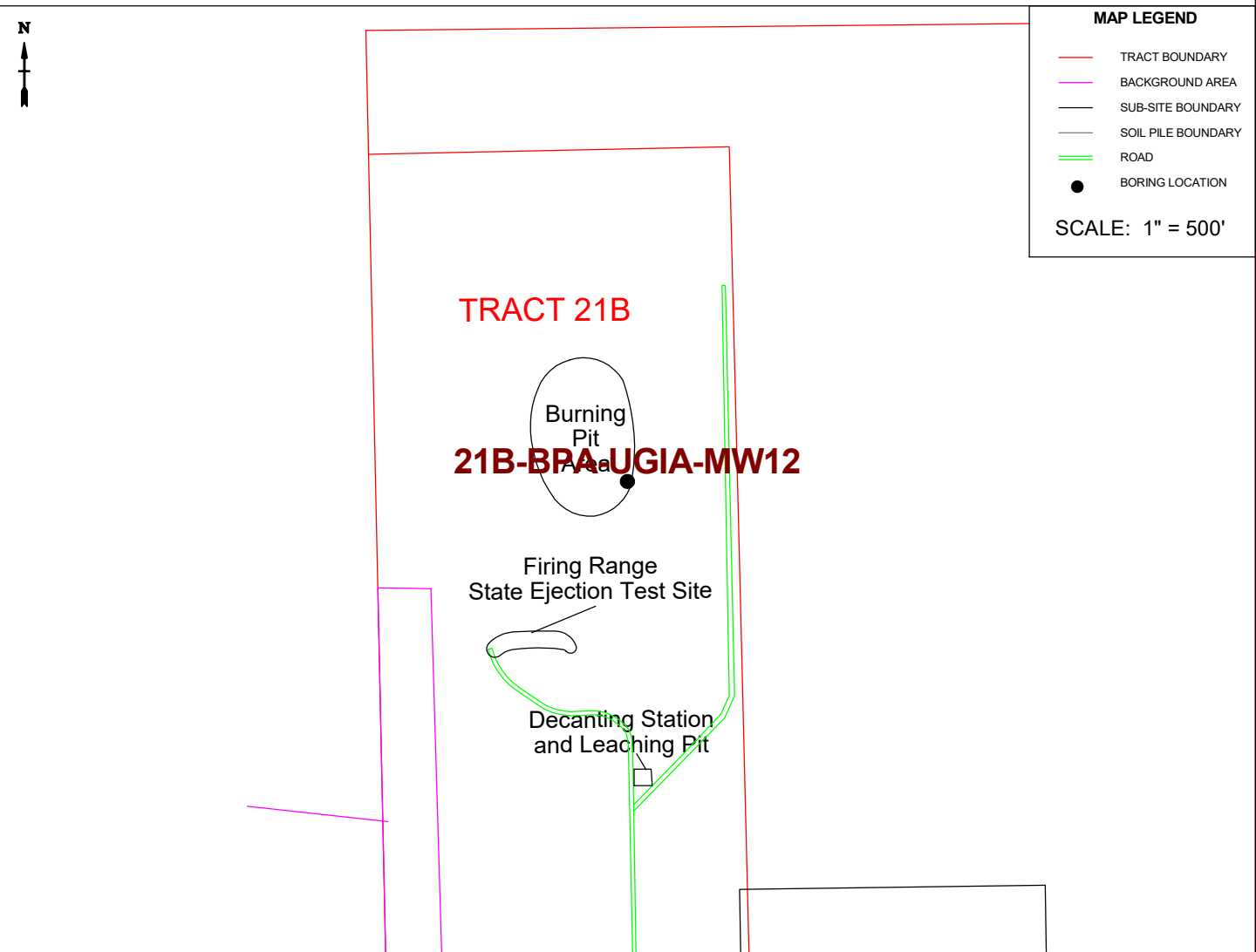
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-UGIA-MW11

| | | | | | |
|--|-------------------|---|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-BPA-UGIA-MW12 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Mobile 57 | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
405258.2 North 2048734.2 East | | | |
| | | 9. SURFACE ELEVATION
1908.6' MSL | | | |
| | | 10. DATE STARTED
7/20/2018 | 11. DATE COMPLETED
7/20/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
12.07 ft on 7/21/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
20.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
12.32 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



| | |
|--|-------------------------------|
| PROJECT CHAAP Grand Island, Nebraska | HOLE NO 21B-BPA-UGIA-MW12 |
|--|-------------------------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-UGIA-MW12

| PROJECT | | CHAAP, Grand Island, Nebraska | DISTRICT | US Army Corps of Engineers - Omaha District | | | SHEET 2 OF 4 SHEETS | |
|--------------|--------------|---|--|---|---------------------------------|-------------------|---|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1908.6 | 0 | (OH) TOPSOIL: Organic soil, low to medium plasticity, low to medium toughness and dry strength, no dilatancy, dark brown, Moist | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery | |
| 1907.6 | 1 | | | | | | | |
| 1906.6 | 2 | | | | | | | |
| 1905.6 | 3 | | | | | | | |
| 1904.6 | 4 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 4/3) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3.5-5.5 ft.
100% Rec. | | 5 | | |
| | | | | | | 3 | | |
| | | | | | | 4 | | |
| 1903.6 | 5 | | | | | 4 | | |
| 1902.6 | 6 | | | | | | | |
| 1901.6 | 7 | | | | | | | |
| | | | | | | | | |
| 1900.6 | 8 | | | | | | | |
| | | Same as above with increased plasticity and moisture. (2.5Y 4/3) | | | | | | |
| | | | | | | | | |
| 1899.6 | 9 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
8.5-10.5 ft.
100% Rec. | | 1 | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-UGIA-MW12

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-UGIA-MW12

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 3 OF 4 SHEETS | |
|--------------|--------------|---|--|--|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1899.6 | 9 | Same as above with increased plasticity and moisture. (2.5Y 4/3) (continued) | | | | | 2 | | |
| | 1 | | | | | | | | |
| 1898.6 | 10 | | | | | | 1 | | |
| | | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
10.5-12.5 ft.
100% Rec. | | 2 | | |
| 1897.6 | 11 | | | | | | 3 | | |
| | | | | | | | 5 | | |
| 1896.6 | 12 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, fine to medium grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2) | | | | | 14 | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 1895.6 | 13 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
12.5-14.5 ft.
100% Rec. | | 11 | | |
| | | | | | | | 10 | | |
| | | | | | | | 8 | | |
| 1894.6 | 14 | | | | | | 9 | | |
| | | | | | | | | | |
| 1893.6 | 15 | | | | | | | | |
| | | | | | | | | | |
| 1892.6 | 16 | | | | | | | | |
| | | | | | | | | | |
| 1891.6 | 17 | | | | | | | | |
| | | | | | | | | | |
| 1890.6 | 18 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-BPA-UGIA-MW12

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-BPA-UGIA-MW12

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 4 OF 4 SHEETS | |
|--------------|--------------|---|--|-----------------------------------|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1890.6 | 18 | (SW) WELL GRADED CLEAN SAND (90%):
Poorly sorted, fine to medium grained,
sub-angular to sub-rounded, loose, wet, less
than 5% fine gravel, 5% fines. (2.5Y 5/2)
(continued) | | | | | | | |
| | | | | | | | 9 | | |
| 1889.6 | 19 | | | | | | 10 | | |
| | | | | | | | 10 | | |
| 1888.6 | 20 | | | | | | 11 | | |
| | | | | | | | | | |
| 1887.6 | 21 | Bottom of Borehole @ 20.5 ft
10 Gallons of Water Lost During Drilling
Heaving Sands12-20.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | |
| | | | | | | | | | |
| 1886.6 | 22 | | | | | | | | |
| | | | | | | | | | |
| 1885.6 | 23 | | | | | | | | |
| | | | | | | | | | |
| 1884.6 | 24 | | | | | | | | |
| | | | | | | | | | |
| 1883.6 | 25 | | | | | | | | |
| | | | | | | | | | |
| 1882.6 | 26 | | | | | | | | |
| | | | | | | | | | |
| 1881.6 | 27 | | | | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

21B-BPA-UGIA-MW12

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21B-Decanting Station Boring Logs
Soil Samples

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| HTRW DRILLING LOG | | | | DISTRICT
USACE - Omaha | | HOLE NUMBER
21B-DS-SB01 | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
HydroGeoLogic, Inc. | | | | 2. DRILLING CONTRACTOR
GSI Engineering | | SHEET
1 OF 2 SHEETS | |
| 3. PROJECT
CHAAP RIFS | | | | 4. LOCATION
Grand Island, NE - CHAAP | | | |
| 5. NAME OF DRILLER
M. Wold | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
GG00 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
GG00 Geoprobe
4"x2" Dual Tube Sampler | | | | 8. HOLE LOCATION
DS-SB01 | | | |
| | | | | 9. SURFACE ELEVATION
— | | | |
| | | | | 10. DATE STARTED
5-15-18 | | 11. DATE COMPLETED
5-15-18 | |
| 12. OVERBURDEN THICKNESS
— | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | |
| 14. TOTAL DEPTH OF HOLE
5' | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | |
| 18. GEOTECHNICAL SAMPLES
X | | DISTURBED
— | | UNDISTURBED
X | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
X | | VOC
X | | METALS
X | | OTHER (SPECIFY)
Expl. | |
| 22. DISPOSITION OF HOLE
Lithology Sampling | | BACKFILLED
X | | MONITORING WELL
X | | 23. SIGNATURE OF INSPECTOR
A. Hedgepeth | |
| LOCATION SKETCH/COMMENTS | | | | SCALE: Not to Scale | | | |
| | | | | | | | |
| PROJECT
CHAAP RIFS | | | | | | HOLE NO
21B-DS-SB01 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | HOLE NUMBER
21B-DS-SB01 | |
|--|--------------|--|-------------------------------|--|---------------------------------|--------------------------------|----------------------------|
| PROJECT
CHAAP RIFS | | | INSPECTOR
A. Hedgepath | | | SHEET 2 OF 2 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PIB
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recurrent
BLOW COUNT
(g) | REMARKS
(h) |
| 5.15.18
830 | 0 | Topsoil | 0.0 | | | | Collect DS-SB01
@ 835 |
| | 1 | | | | | | |
| | 2 | Lean Clay w Tr. F. Sand,
Dry to moist, L. to Non
Plastic, light gray 7.5yr 7/1
m. stiff | | CL | 1 | | |
| | 3 | | | | | | |
| | 4 | Same as above - moist,
m. plastic | 0.0 | CL | 2 | | Collect DS-SB01-S
@ 840 |
| 5.15.18
835 | 5 | -End of boring at 5' | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO. 21B-DS-SB01

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>21B-DS-SB02</i> | |
|---|--|------------------------|---|----------------------------------|--------------------------------------|---|--|
| 1. COMPANY NAME
<i>HydroGeologic, Inc.</i> | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | | SHEET
1 OF 3 | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | 4. LOCATION
<i>Grand Island, NE - CHAAP</i> | | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>G600 Geoprobe</i> | | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>G600 Geoprobe
1"x2" Dual Tube Sampler</i> | | | 8. HOLE LOCATION
<i>DS-SB02</i> | | | | |
| | | | 9. SURFACE ELEVATION
— | | | | |
| | | | 10. DATE STARTED
<i>5-14-18</i> | | 11. DATE COMPLETED
<i>5-14-18</i> | | |
| 12. OVERBURDEN THICKNESS
— | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | | |
| 14. TOTAL DEPTH OF HOLE
<i>10'</i> | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | | |
| 18. GEOTECHNICAL SAMPLES
<i>X</i> | | DISTURBED
— | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY) | |
| | | | | | | OTHER (SPECIFY) | |
| 22. DISPOSITION OF HOLE
<i>Lithology Sampling</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | OTHER (SPECIFY) | |
| | | | | | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepath</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| SCALE: <i>Not to Scale</i> | | | | | | | |
| | | | | | | | |
| PROJECT: <i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>21B-DS-SB02</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
21B-DS-5B02 |
|--|--------------|---|-------------------------------|--|---------------------------------|-------------------------------|---------------------------------------|
| PROJECT
CHAAP RIFS | | | INSPECTOR
A. Hedgepath | | | SHEET 2 OF 2 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
| 514.18
1455 | 0 | Topsoil | 0.0 | | | | Collect DS-5B02 @ 1500
+ FD @ 1200 |
| | 1 | | | | | | |
| | 2 | Lean clay w/ f. sand
+ Fe. stain, Dry to moist,
L. to non plastic, m. stiff | | CL | 1 | 75% | |
| | 3 | | | | | | |
| | 4 | Same as above | 0.0 | CL | | | Collect DS-5B02-S
@ 1505 |
| | 5 | | | | 2 | 50% | |
| | 6 | | | | | | |
| | 7 | | | | | | |

PROJECT
CHAAP RIFS

HOLE NO
21B-DS-5B02

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
21B-DS-5802 |
|--|--------------|---------------------------------|-------------------------------|--|---------------------------------|------------------------------|----------------------------|
| PROJECT
CHAAP - RIFS | | | INSPECTOR
A. Hedgpark | | | | SHEET
3 OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PSD
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Flowing
BLOW COUNT
(g) | REMARKS
(h) |
| | 7 | See previous page | | | | | |
| | 8 | | | | | | |
| | 9 | Some, moist, m. plastic | 0.0 | CL | 3 | 75% | Collect DS-5802-10 @ 1510 |
| 5.148
1505 | 10 | End of boring @ 10' | | | | | |
| | 11 | | | | | | |
| | 12 | | | | | | |
| | 13 | | | | | | |
| | 14 | | | | | | |

| | |
|-----------------------|------------------------|
| PROJECT
CHAAP RIFS | HOLE NO
21B-DS-5802 |
|-----------------------|------------------------|

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>21B-DS-SB03</i> | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET
<i>1</i> OF <i>3</i> SHEETS | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Grand Island, NE - CHAAP</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>G600 Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>G600 Geoprobe
4"x2" Dual Tube Sampler</i> | | | | 8. HOLE LOCATION
<i>DS-SB03</i> | | | |
| | | | | 9. SURFACE ELEVATION
— | | | |
| | | | | 10. DATE STARTED
<i>5.14.18</i> | | 11. DATE COMPLETED
<i>5.14.18</i> | |
| 12. OVERBURDEN THICKNESS
— | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | |
| 14. TOTAL DEPTH OF HOLE
<i>10'</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | |
| 18. GEOTECHNICAL SAMPLES
<i>X</i> | | DISTURBED
— | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>X</i> | | VOC
<i>X</i> | | METALS
<i>X</i> | | OTHER (SPECIFY)
<i>Explosives</i> | |
| 22. DISPOSITION OF HOLE
<i>Lithology Sampling</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL
— | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepath</i> | |
| 21. TOTAL CORE
— | | %
— | | | | | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="position: relative; width: 100%; height: 100%;"> <div style="position: absolute; top: 10%; left: 10%;"> </div> </div> | | | | | | | |
| SCALE: <i>Not to Scale</i> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>21B-DS-SB03</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|--|-------------------------------|--|---------------------------------|-------------------------------|---------------------------------------|
| PROJECT | | | INSPECTOR | | | SHEET | |
| CHAAP RIFS | | | A. Hedgepath | | | 2 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
| 5.14.18
1110 | 0 | Topsoil - silty clay w/
f. f. sand, dry, loose to
med dense, v. dk Brn
7.5 yr 2/3 | 0.0 | | | | Collect ZIB-DS
-SB03 + FD
@1115 |
| | 1 | | | | | | |
| | 2 | | | | 1 | 50% | |
| | 3 | Gradual to lean clay w/
f. f. sand, m. plastic,
moist, light gray 10 yr 7/1 | | CL | | | |
| | 4 | Same as above, stiff,
m. plastic | 0.0 | CL | | | Collect ZIB-DS
-SB03-S
@1130 |
| | 5 | | | | | | |
| | 6 | | | | 2 | 15% | |
| | 7 | on next page | | | | | |

PROJECT CHAAP RIFS

HOLE NO. ZIB-DS-SB03

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
21B-DS-SB03 |
|--|--------------|---------------------------------|---------------------------|--|---------------------------------|-------------------|-------------------------------|
| PROJECT
CHAAP - RIFS | | | INSPECTOR
A. Hedgepeth | | | | SHEET
3 OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Blow Count
(g) | REMARKS
(h) |
| | 7 | See previous page | | | | | |
| | 8 | Same as above | | | | | |
| | 9 | Same as above | | | 3 | | |
| | 10 | | 0.0 | CL | | | Collect 21B-DS-SB03-10 @ 1145 |
| 5.14.11
1140 | 10 | End of boring @ 10' | | | | | |
| | 11 | | | | | | |
| | 12 | | | | | | |
| | 13 | | | | | | |
| | 14 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO 21B-DS-SB03

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>21B-DS-SB04</i> | |
|---|--|------------------------|--|---|--|--|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Earth Engineering</i> | | SHEET
<i>1</i> OF <i>3</i> SHEETS | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Grand Island, NE - CHAAP</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>G600 Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>G600 Geoprobe
4"x2" Dual Tube Sampler</i> | | | | 8. HOLE LOCATION
<i>DS-SB04</i> | | | |
| | | | | 9. SURFACE ELEVATION
— | | | |
| | | | | 10. DATE STARTED
<i>5.14.18</i> | | 11. DATE COMPLETED
<i>5.14.18</i> | |
| 12. OVERBURDEN THICKNESS
— | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | |
| 14. TOTAL DEPTH OF HOLE
<i>10'</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | |
| 18. GEOTECHNICAL SAMPLES
<i>X</i> | | DISTURBED
— | | UNDISTURBED
<i>X</i> | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>X</i> | | VOC
<i>X</i> | | METALS
<i>X</i> | | OTHER (SPECIFY)
<i>Explosives</i> | |
| 22. DISPOSITION OF HOLE
<i>Lithology Sampling</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgespeth</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| SCALE: <i>Not to Scale</i> | | | | | | | |
| | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>21B-DS-SB04</i> | |

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER
21B-DS-SB04
SHEET 2 OF 3

PROJECT CHAAP RIFS

INSPECTOR A. Hedgepeth

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PIU
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
|-----------------|--------------|---|-------------------------------|--|---------------------------------|-------------------------------|------------------------------|
| 5.14.18
1200 | 0 | Topsoil | 0.0 | | | 75% | Collect DS-SB04
@ 1210 |
| | 1 | | | | | | |
| | 2 | Transition to lean clay
w/ Tr F. Sand, light
gray, L. plastic, stiff,
moist (7.5% 7/1) | | 1 | CL | | |
| | 3 | | | | | | |
| | 4 | Same as above, | | | CL | | Collect DS-SB04
-5 @ 1215 |
| | 5 | | | | | | |
| | 6 | | | 2 | | 75% | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO 21B-DS-SB04

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
21B-DS-SB04 |
|--|--------------|---------------------------------|---------------------------|--|---------------------------------|---------------------------------|----------------------------|
| PROJECT
CHAAP - RIFS | | | INSPECTOR
A. Hedgepeth | | | SHEET
3 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | REMARKS
(h) | |
| | 7 | See previous page | | | | | |
| | 8 | Same as above | | | | | |
| | 9 | | 0.0
↓
AA | 3 | CL 50% | Collect
DS-SB04-10
@ 1220 | |
| 5.14110
1215 | 10 | End of Borehole at 10' | | | | | |
| | 11 | | | | | | |
| | 12 | | | | | | |
| | 13 | | | | | | |
| | 14 | | | | | | |

PROJECT
CHAAP RIFS

HOLE NO
21B-DS-SB04

| HTRW DRILLING LOG | | | | DISTRICT
USACE - Omaha | | HOLE NUMBER
Z1B-DS-SB05 | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
HydroGeoLogic, Inc. | | | | 2. DRILLING CONTRACTOR
GSI Engineering | | SHEET 1 OF 3 SHEETS | |
| 3. PROJECT
CHAAP RIFS | | | | 4. LOCATION
Grand Island, NE | | | |
| 5. NAME OF DRILLER
J. Finneth R. Hopkins | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
6600 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
6600 Geoprobe
2" x 4' Dual tube | | | | 8. HOLE LOCATION
Z1B-DS-SB | | | |
| | | | | 9. SURFACE ELEVATION
NA | | | |
| | | | | 10. DATE STARTED
4.10.18 | | 11. DATE COMPLETED
4.10.18 | |
| 12. OVERBURDEN THICKNESS
NA | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
NA | | | |
| 13. DEPTH DRILLED INTO ROCK
NA | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
NA | | | |
| 14. TOTAL DEPTH OF HOLE
NA 10' | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
NA | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED
- | | UNDISTURBED
- | | 19. TOTAL NUMBER OF CORE BOXES
- | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC
X | | METALS
X | | OTHER (SPECIFY)
EXPI | |
| | | | | | | 21. TOTAL CORE
NA % | |
| 22. DISPOSITION OF HOLE
SS/SB | | BACKFILLED
L | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
A. Hodgepate | |
| <div style="display: flex; justify-content: space-between;"> LOCATION SKETCH/COMMENTS SCALE: Not to Scale </div> <div style="text-align: center; margin-top: 20px;"> </div> | | | | | | | |
| PROJECT
CHAAP RIFS | | | | | | HOLE NO
Z1B-DS-SB01 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|--|------------------------|--|---------------------------------|-------------------|--|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIFS | | | A. Hedgepeth | | | 2 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1015
4.10.8 | 0 | Topsoil | PID
0.0 | | | | Collected @ 1010
CHAAP-ZIB-DS-SS05 |
| | 1 | St Lean Clay w/ Tr F. Sand
95% CL, 5% Sand, stiff,
Dry, non plastic, light
Brownish Gray (2.5 vs 6 1/2) | 0.0 | 1 | | CL | |
| | 2 | | | | | | |
| | 3 | | | | | | |
| | 4 | Same as above, becoming
Soft, Fe stain, L. plastic | 0.0 | | | CL | Collected
CHAAP-ZIB-DS-SB05
-5
@ 1025 |
| | 5 | Same as above | | | | | |
| | 6 | | | 2 | | | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO
ZIB-DS-SB05

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|-------------------------------|--|---------------------------------|-------------------|---|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIFS | | | A. Hedgpark | | | 3 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 103.5
4.10.18 | 8 | | | 2 | | | |
| | 9 | Lean Clay w Tr. F. Sand,
M. stiff, moist, M. plastic,
Fe stain, light grey
(Z-Sr 7/12) | 0.0 | 3 | | | collected CHAAP
ZIB-DS-SBOS-10
@ 1030 |
| | 10 | TD of Boring at 10' | | BGS | | | |
| | 11 | | | | | | |
| | 12 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO ZIB-DS-SBOS

| HTRW DRILLING LOG | | | | DISTRICT
USACE - Omaha | | HOLE NUMBER
218-DS-SB06 | |
|---|--|--|--|--|--|--------------------------------------|--|
| 1. COMPANY NAME
HydroGeoLogic, Inc. | | | | 2. DRILLING CONTRACTOR
GSE Engineering | | SHEET 1 OF 3 SHEETS | |
| 3. PROJECT
CHAAP RIES | | | | 4. LOCATION
Grand Island, NE - CHAAP | | | |
| 5. NAME OF DRILLER
M. Wold | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
G600 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
G600 Geoprobe
4"x2" Dual Tube Sampler | | | | 8. HOLE LOCATION
DS-SB06 | | | |
| 12. OVERBURDEN THICKNESS
— | | | | 9. SURFACE ELEVATION
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 10. DATE STARTED
5.14.18 | | 11. DATE COMPLETED
5.14.18 | |
| 14. TOTAL DEPTH OF HOLE
10' | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 18. GEOTECHNICAL SAMPLES | | | | 19. TOTAL NUMBER OF CORE BOXES | | | |
| DISTURBED
<input checked="" type="checkbox"/> | | UNDISTURBED
<input checked="" type="checkbox"/> | | 20. SAMPLES FOR CHEMICAL ANALYSIS | | | |
| <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | VOC | | METALS | |
| <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | OTHER (SPECIFY)
Expl. | | OTHER (SPECIFY) | |
| 22. DISPOSITION OF HOLE
Lithology / sampling | | BACKFILLED
<input checked="" type="checkbox"/> | | MONITORING WELL
<input checked="" type="checkbox"/> | | 21. TOTAL CORE
— % | |
| 23. SIGNATURE OF INSPECTOR
A. Hedgepath | | | | SCALE: Not to Scale | | | |
| LOCATION SKETCH/COMMENTS
 | | | | | | | |
| PROJECT
CHAAP RIES | | | | HOLE NO
218-DS-SB06 | | | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
21B-DS-SB06 |
|--|--------------|---|-------------------------------|--|---------------------------------|-------------------------------|--------------------------------|
| PROJECT
CHAAP RIFS | | | INSPECTOR
A. Hedgepath | | | SHEET 2 OF 2 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
| 5.1418
1425 | 0 | Topsoil | 0.0 | | | | Collected DS-SB06
@ 1430 |
| | 1 | | | | | | |
| | 2 | Lean clay w Tr. F. Sand
Tr. Fe stain/mottles, light
gray 7.5 y- 7.5 l, moist,
stiff, L. to non plastic | | CL | | 1 75% | |
| | 3 | | | | | | |
| | 4 | Lean clay w Tr. F. Sand
Tr. Fe stain, moist, L. plastic
m. stiff | 0.0 | CL | | | Collected DS-SB06
-S @ 1435 |
| | 5 | | | | | | |
| | 6 | | | | | 2 75% | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO 21B-DS-SB06

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | HOLE NUMBER
218-DS-SB06 | |
|--|--------------|---------------------------------|------------------------|--|---------------------------------|----------------------------|----------------------------------|
| PROJECT
CHAAP - RIFS | | | INSPECTOR
A. Hedger | | | SHEET 3 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | REMARKS
(g) | REMARKS
(h) |
| | 7 | Same as above | | | | | |
| | 8 | | | | | | |
| | 9 | Same as above | 0.0 | CL | 3 | 75% | Collected
DS-SB06-10
B1440 |
| 5.14.8
1435 | 10 | - End of boring at 10' | | | | | |
| | 11 | | | | | | |
| | 12 | | | | | | |
| | 13 | | | | | | |
| | 14 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO 218-DS-SB06

| HTRW DRILLING LOG | | | | DISTRICT
USACE - Omaha | | HOLE NUMBER
21B-DS-SB07 | |
|---|--|-------------------------------------|--|--|--|--------------------------------------|--|
| 1. COMPANY NAME
HydroGeoLogic, Inc. | | | | 2. DRILLING CONTRACTOR | | SHEET 1 OF 3 | |
| 3. PROJECT
CHAAP RIES | | | | 4. LOCATION
Grand Island, NE - CHAAP | | | |
| 5. NAME OF DRILLER
M. Wold | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
GG00 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
GG00 Geoprobe
4"x2" Dual Tube Sampler | | | | 8. HOLE LOCATION
DS-SB07 | | | |
| | | | | 9. SURFACE ELEVATION | | | |
| | | | | 10. DATE STARTED
5.14.18 | | 11. DATE COMPLETED
5.14.18 | |
| 12. OVERBURDEN THICKNESS | | | | 15. DEPTH GROUNDWATER ENCOUNTERED | | | |
| 13. DEPTH DRILLED INTO ROCK | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED | | | |
| 14. TOTAL DEPTH OF HOLE
10' | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED | | 19. TOTAL NUMBER OF CORE BOXES | |
| <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY) | |
| <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | |
| 22. DISPOSITION OF HOLE | | BACKFILLED | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR | |
| Lithology Sampling | | <input checked="" type="checkbox"/> | | <input type="checkbox"/> | | A. Hedgepeth | |
| <div style="display: flex; justify-content: space-between;"> LOCATION SKETCH/COMMENTS SCALE: Not to Scale </div> <div style="height: 300px; border: 1px dotted black; position: relative;"> <div style="position: absolute; top: 10%; left: 10%;"> </div> </div> | | | | | | | |
| PROJECT
CHAAP RIES | | | | | | HOLE NO
21B-DS-SB07 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
218-DS-5807 |
|--|--------------|--|-------------------------------|--|---------------------------------|-------------------------------|--------------------------------------|
| PROJECT
CHAAP RIFS | | | INSPECTOR
A. Hedgepath | | | | SHEET
2 OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
| 5.14.18
1335 | 0 | Topsoil | 0.0 | | | | collect DS-5807
@ 1400
+ms/msd |
| | 1 | | | | | | |
| | 2 | Lean Clay w/ Tr. F. Sand
Tr. Fr. Stein, moist, stiff,
L. plastic/non plastic | | CL | 1 | 75% | |
| | 3 | | | | | | |
| | 4 | Same as above | 0.0 | CL | | | Collect DS-5807
-5 @ 1403
+FD |
| | 5 | | | | | | |
| | 6 | | | | 2 | 75% | |
| | 7 | | | | | | |

PROJECT
CHAAP RIFS

HOLE NO.
218-DS-5807

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
Z1B-DS-5807 |
|--|--------------|---------------------------------|--------------------------|--|---------------------------------|----------------|-----------------------------|
| PROJECT
CHAAP - RIFS | | | INSPECTOR
A. Hedgpeth | | | SHEET
3 | SHEETS
OF 3 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | REMARKS
(g) | REMARKS
(h) |
| | 7 | See previous page | | | | | |
| | 8 | | | | | | |
| | 9 | Some ss above | 0.0 | | 3 | 50% | Collected DS-5807-10 @ 1405 |
| 5.14.18
1405 | 10 | End of boring @ 10' | | | | | |
| | 11 | | | | | | |
| | 12 | | | | | | |
| | 13 | | | | | | |
| | 14 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO
Z1B-DS-5807

| HTRW DRILLING LOG | | | | DISTRICT
USACE - Omaha | | HOLE NUMBER
21B-DS-SB08 | |
|--|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
HydroGeoLogic, Inc. | | | | 2. DRILLING CONTRACTOR
GSS Engineering | | SHEET
1 OF 2 SHEETS | |
| 3. PROJECT
CHAAP RIES | | | | 4. LOCATION
Grand Island, NE - CHAAP | | | |
| 5. NAME OF DRILLER
M. Wold | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
G600 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
G600 Geoprobe
4"x2" Dual Tube Sampler | | | | 8. HOLE LOCATION
DS-SB08 | | | |
| | | | | 9. SURFACE ELEVATION
— | | | |
| | | | | 10. DATE STARTED
5.14.18 | | 11. DATE COMPLETED
5.14.18 | |
| 12. OVERBURDEN THICKNESS
— | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | |
| 14. TOTAL DEPTH OF HOLE
5' | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | |
| 18. GEOTECHNICAL SAMPLES
X | | DISTURBED
— | | UNDISTURBED
X | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
X | | VOC
X | | METALS
X | | OTHER (SPECIFY)
Exp. | |
| 22. DISPOSITION OF HOLE
Lithology Sampling | | BACKFILLED
X | | MONITORING WELL
— | | 23. SIGNATURE OF INSPECTOR
A. Hedgepath | |
| | | | | | | 21. TOTAL CORE
— % | |
| <div style="display: flex; justify-content: space-between;"> LOCATION SKETCH/COMMENTS SCALE: Not to Scale </div> <div style="text-align: center; margin-top: 20px;"> </div> | | | | | | | |
| PROJECT
CHAAP RIES | | | | | | HOLE NO
21B-DS-SB08 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | HOLE NUMBER
21B-DS-SB08 | |
|--|--------------|--|-------------------------------|--|---------------------------------|-------------------------------|---------------------------|
| PROJECT
CHAAP RIFS | | | INSPECTOR
A. Hedgepath | | | SHEET 2 OF 2 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PIB
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
| 5.14.14
1330 | 0 | Topsoil | 0.0 | | 1 | | Collect DS-SB08
@ 1335 |
| | 1 | | | | | 75% | |
| | 2 | Lean clay w/ F. Sand,
light Gray F.S. 711,
stiff, L. plastic | | CL | | | |
| | 3 | | | | | | |
| | 4 | Same as above | 0.0 | CL | 2 | 50% | Collect DS-SB08
@ 1340 |
| 5.14.15
1335 | 5 | End of boring at 5' SD | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO. 21B-DS-SB08

| HTRW DRILLING LOG | | | | DISTRICT
USACE - Omaha | | HOLE NUMBER
21B-DS-SB09 | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
HydroGeoLogic, Inc. | | | | 2. DRILLING CONTRACTOR
GSE Engineering | | SHEET
1 OF 2 SHEETS | |
| 3. PROJECT
CHAAP RIES | | | | 4. LOCATION
Grand Island, NE - CHAAP | | | |
| 5. NAME OF DRILLER
M. Wold | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
G600 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
G600 Geoprobe
4"x2" Dual Tube Sampler | | | | 8. HOLE LOCATION
DS-SB09 | | | |
| | | | | 9. SURFACE ELEVATION
— | | | |
| | | | | 10. DATE STARTED
5.14.18 | | 11. DATE COMPLETED
5.14.18 | |
| 12. OVERBURDEN THICKNESS
— | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | |
| 14. TOTAL DEPTH OF HOLE
5' | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | |
| 18. GEOTECHNICAL SAMPLES
X | | DISTURBED
— | | UNDISTURBED
X | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
X | | VOC
X | | METALS
X | | OTHER (SPECIFY)
Explosives | |
| 22. DISPOSITION OF HOLE
Lithology Sampling | | BACKFILLED
X | | MONITORING WELL
— | | 23. SIGNATURE OF INSPECTOR
A. Hedgepeth | |
| LOCATION SKETCH/COMMENTS | | | | SCALE: Not to Scale | | | |
| | | | | | | | |
| PROJECT
CHAAP RIES | | | | | | HOLE NO
21B-DS-SB09 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|-------------------------------|--|---------------------------------|-------------------------------|---|
| PROJECT | | | INSPECTOR | | | SHEET | |
| CHAAP RIFS | | | A. Hedgepath | | | 2 OF 2 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
| 5.14.18
1310 | 0 | Topsoil | | | | | Collect DS-SS-01
@ 1310
@ 1315 AH |
| | 1 | | | | | | |
| | 2 | Lean clay w fr. f. sand
& fr. Fe stain, moist,
stiff, m. plastic, | | CL | 1 | 50% | |
| | 3 | | | | | | |
| | 4 | Same as above | | CL | 2 | 50% | Collect DS-SS-09
-5
@ 1320 |
| 5.14.18
1315 | 5 | End of Boring at 5' BGS | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO. 21B-DS-SS-09

| HTRW DRILLING LOG | | | | DISTRICT
USACE - Omaha | | HOLE NUMBER
21B-DS-SB10 | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
HydroGeoLogic, Inc. | | | | 2. DRILLING CONTRACTOR
GSE Engineering | | SHEET 1 OF 2 SHEETS | |
| 3. PROJECT
CHAAP RIES | | | | 4. LOCATION
Grand Island, NE - CHAAP | | | |
| 5. NAME OF DRILLER
M. Wold | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
G600 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
G600 Geoprobe
4"x2" Dual Tube Sampler | | | | 8. HOLE LOCATION
DS-SB10 | | | |
| | | | | 9. SURFACE ELEVATION
— | | | |
| | | | | 10. DATE STARTED
5-14-18 | | 11. DATE COMPLETED
5-14-18 | |
| 12. OVERBURDEN THICKNESS
— | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | |
| 14. TOTAL DEPTH OF HOLE
5' | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | |
| 18. GEOTECHNICAL SAMPLES
X | | DISTURBED
— | | UNDISTURBED
X | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
X | | VOC
X | | METALS
X | | OTHER (SPECIFY)
Explosives | |
| 22. DISPOSITION OF HOLE
Lithology Sampling | | BACKFILLED
X | | MONITORING WELL
— | | 23. SIGNATURE OF INSPECTOR
A. Hedgepath | |
| LOCATION SKETCH/COMMENTS | | | | SCALE: Not to Scale | | | |
| | | | | | | | |
| PROJECT: CHAAP RIES | | | | | | HOLE NO
21B-DS-SB10 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | HOLE NUMBER
218-DS-SB10 | |
|--|--------------|--|-------------------------------|--|---------------------------------|-------------------------------|--------------------------|
| PROJECT
CHAAP RIFS | | | INSPECTOR
A. Hedgepath | | | SHEET
2 OF 2 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
| 5.148
1225 | 0 | Topsoil | 0.0 | | | 75% | Collect DS-SB10 @ 1230 |
| | 1 | | | | | | |
| | 2 | Transition to Lean Clay
Rte 1 T. F. Sand, moist,
stiff, L. plastic | | CL | 1 | | |
| | 3 | | | | | | |
| | 4 | Same as above | 0.0 | CL | 2 | 50% | Collect DS-SB10-S @ 1235 |
| 5.1485
1235 | 5 | -End of borehole at 10' | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |

PROJECT
CHAAP RIFS

HOLE NO
218-DS-SB10

| HTRW DRILLING LOG | | | | DISTRICT
USACE - Omaha | | HOLE NUMBER
21B-DS-SB11 | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
HydroGeoLogic, Inc. | | | | 2. DRILLING CONTRACTOR
GSS Engineering | | SHEET
1 OF 2 SHEETS | |
| 3. PROJECT
CHAAP RIFS | | | | 4. LOCATION
Grand Island, NE - CHAAP | | | |
| 5. NAME OF DRILLER
M. Vold | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
G600 Geoprobe | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
G600 Geoprobe
4"x2" Dual Tube Sampler | | | | 8. HOLE LOCATION
DS-SB11 | | | |
| | | | | 9. SURFACE ELEVATION
— | | | |
| | | | | 10. DATE STARTED
5.14.18 | | 11. DATE COMPLETED
5.14.18 | |
| 12. OVERBURDEN THICKNESS
— | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
— | | | |
| 13. DEPTH DRILLED INTO ROCK
— | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
— | | | |
| 14. TOTAL DEPTH OF HOLE
5' | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
— | | | |
| 18. GEOTECHNICAL SAMPLES
X | | DISTURBED
— | | UNDISTURBED
X | | 19. TOTAL NUMBER OF CORE BOXES
— | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
X | | VOC
X | | METALS
X | | OTHER (SPECIFY)
Geodesics | |
| 22. DISPOSITION OF HOLE
Lithology Sampling | | BACKFILLED
X | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
A. Hedgepeth | |
| LOCATION SKETCH/COMMENTS | | | | SCALE: Not to Scale | | | |
| | | | | | | | |
| PROJECT
CHAAP RIFS | | | | | | HOLE NO
21B-DS-SB11 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|--|-------------------------------|---|---------------------------------|-------------------------------|-----------------------------------|
| PROJECT | | | INSPECTOR | | | | SHEET |
| CHAAP RIFS | | | A. Hedgpeth | | | | 2 OF 2 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PIU
(d) | GEO TECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | Recovery
BLOW COUNT
(g) | REMARKS
(h) |
| 5.14.18
1245 | 0 | Topsoil | 0.0 | | | | Collect DS-SS11
+ FO
@ 1250 |
| | 1 | | | | | | |
| | 2 | Lean Clay w Tr. F. Sand
+ Tr. Fe Stain, moist, sticky,
m. plastic light Gray
7.5% 7/1 | | CL | 1 | 75% | |
| | 3 | | | | | | |
| | 4 | Same as above | 0.0 | CL | 2 | 75% | Collect DS-SB11-S
@ 1300 |
| 5.14.18
1255 | 5 | End of Boring @ 5' | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO 21B-DS-SB11

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>Z1B-DS-SB12</i> | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSI Engineering</i> | | SHEET 1 OF 2 | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Grand Island, NE</i> | | | |
| 5. NAME OF DRILLER
<i>DA J. Finnell R. Hopkins</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>6600 Geoprobe</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>6600 Geoprobe
2" x 4' Dual tube</i> | | | | 8. HOLE LOCATION
<i>Z1B-DS-SB</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>4.10.18</i> | | 11. DATE COMPLETED
<i>4.10.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>NA</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>5'</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES | | DISTURBED | | UNDISTURBED | | 19. TOTAL NUMBER OF CORE BOXES | |
| | | | | | | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY) | |
| | | <i>X</i> | | <i>X</i> | | <i>Exp</i> | |
| 22. DISPOSITION OF HOLE
<i>SS/SB</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | OTHER (SPECIFY) | |
| | | | | | | 23. SIGNATURE OF INSPECTOR
<i>A. Hodgepate</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| SCALE: | | | | | | | |
| | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>Z1B-DS-SB12</i> | |


| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|--|------------------------|--|---------------------------------|-------------------|---|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIFS | | | A. Lechopatz | | | 2 OF 2 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1040
4.10.18 | 0 | Topsoil | 0.0 | | | | Collected CHAAP-
ZIB-DS-SS12
@ 1045 |
| | 1 | Lean clay w/ Tr. Fsand,
Dry, V. Stiff, Low plastic,
Dark grayish Brown,
(-2.5y 4/2) | 0.0 | | | | |
| | 2 | | | 1 | | | |
| | 3 | | | | | | |
| | 4 | | | | | | |
| | 4 | Same as above, moist,
Stiff. | 0.0 | 2 | | | Collected CHAAP-
ZIB-DS-SB12-S
@ 1050 |
| 1050
4.10.18 | 5 | TD of Boring 5' BGS | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

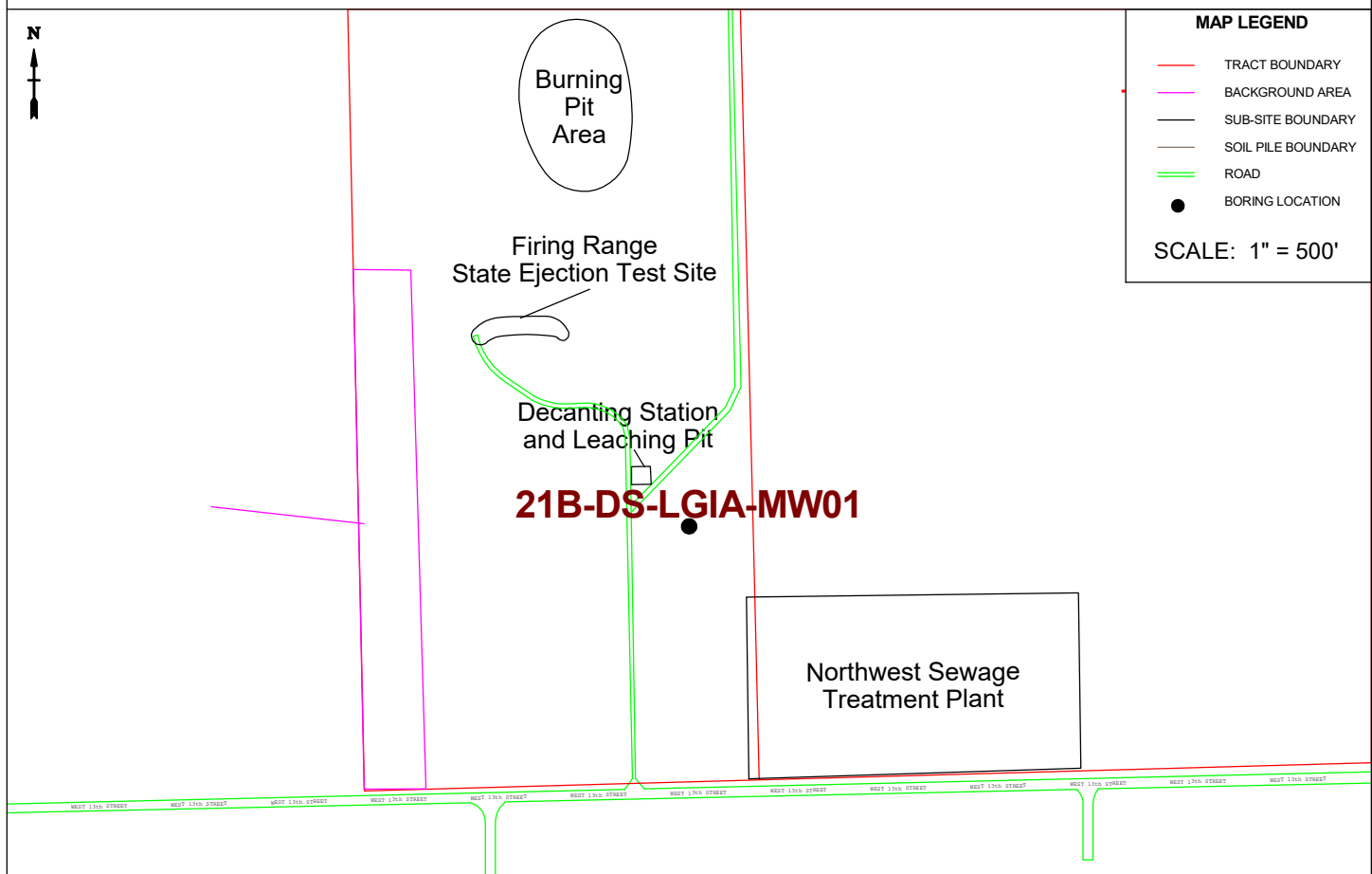
HOLE NO ZIB-DS-SB12

**21B-Decanting Station Boring Logs
Monitoring Wells**

| | | | | | |
|--|-------------------|---|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-DS-LGIA-MW01 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET 1 OF 6 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
404234.4 North 2048912.2 East | | | |
| | | 9. SURFACE ELEVATION
1909.5' MSL | | | |
| | | 10. DATE STARTED
5/15/2018 | | 11. DATE COMPLETED
5/15/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
12.4 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
11.41 ft on 5/16/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
43.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
11.47 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW01

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1909.5 | 0 | Topsoil | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
0-2 ft.
100% Rec. | | 3 | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1908.5 | 1 | (ML) CLAYEY SILT: Stiff, moist, dark brown,
low plasticity. (2.5Y 3/1) | | | | 4 | |
| | | | | | | 5 | |
| | | | | | | 5 | |
| 1907.5 | 2 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1906.5 | 3 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
3-5 ft.
100% Rec. | | 3 | |
| | | Increasing plasticity and moisture with fine
grained sand. (2.5Y 3/1) | | | | 4 | |
| 1905.5 | 4 | | | | | 4 | |
| | | | | | | 5 | |
| 1904.5 | 5 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1903.5 | 6 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1902.5 | 7 | | | | | | |
| | | | | | | | |
| 1901.5 | 8 | (CL) SILTY CLAY: Soft, moist, light brown,
medium plasticity. (2.5Y 5/3) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
8-10 ft.
100% Rec. | | W | |
| | | | | | | 2 | |
| 1900.5 | 9 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW01

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW01

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1900.5 | 9 | (CL) SILTY CLAY: Soft, moist, light brown, medium plasticity. (2.5Y 5/3) (continued) | | | | 2 | |
| | | | | | | 2 | |
| 1899.5 | 10 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
10-12 ft.
100% Rec. | | W | |
| | | | | | | W | |
| 1898.5 | 11 | | | | | 3 | |
| | | | | | | 3 | |
| 1897.5 | 12 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
12-14 ft.
100% Rec. | | 3 | |
| | | (SP) SAND: Loose, wet, medium-grained. (2.5Y 5/3) | | | | 4 | |
| 1896.5 | 13 | Becomes gray, medium to coarse-grained. (N 6/1) | | | | 5 | |
| | | Becomes light brown. (2.5Y 5/3) | | | | 4 | |
| 1895.5 | 14 | | | | | | |
| 1894.5 | 15 | | | | | | |
| 1893.5 | 16 | | | | | | |
| 1892.5 | 17 | | | | | | |
| 1891.5 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW01

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW01

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 4 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1891.5 | 18 | Becomes light brown. (2.5Y 5/3) (continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
18-20 ft.
100% Rec. | | 4 | |
| | | Becomes medium dense, gray. (N 6/1) | | | | 5 | |
| 1890.5 | 19 | | | | | 7 | |
| | | | | | | 8 | |
| 1889.5 | 20 | | | | | | |
| | | | | | | | |
| 1888.5 | 21 | | | | | | |
| | | | | | | | |
| 1887.5 | 22 | | | | | | |
| | | | | | | | |
| 1886.5 | 23 | | | | | 6 | |
| | | Becomes greenish-gray with trace gravel.
(2.5Y 5/2) | | | | 6 | |
| 1885.5 | 24 | | | | | 10 | |
| | | | | | | 10 | |
| 1884.5 | 25 | | | | | | |
| | | | | | | | |
| 1883.5 | 26 | | | | | | |
| | | | | | | | |
| 1882.5 | 27 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW01

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW01

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | | SHEET 5 OF 6 SHEETS | |
|--------------|--------------|--|--|---|---------------------------------|-------------------|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1882.5 | 27 | Becomes greenish-gray with trace gravel.
(2.5Y 5/2) (continued) | | | | | | | |
| 1881.5 | 28 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 8
28-30 ft.
100% Rec. | | 6 | | | |
| | | | | | | 6 | | | |
| 1880.5 | 29 | | | | | 7 | | | |
| | | | | | | 8 | | | |
| 1879.5 | 30 | | | | | | | | |
| | | | | | | | | | |
| 1878.5 | 31 | | | | | | | | |
| | | | | | | | | | |
| 1877.5 | 32 | | | | | | | | |
| | | | | | | | | | |
| 1876.5 | 33 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 9
33-35 ft.
100% Rec. | | 6 | | |
| | | | | | | | 8 | | |
| 1875.5 | 34 | | | | | | 9 | | |
| | | | | | | | 12 | | |
| 1874.5 | 35 | | | | | | | | |
| 1873.5 | 36 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW01

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


21B-DS-LGIA-MW01

| PROJECT | | DISTRICT | | SHEET | | | OF | | SHEETS | |
|-------------------------------|--------------|--|--|--|---------------------------------|-------------------|----------------|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 6 | | | 6 | | 6 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| 1873.5 | 36 | Becomes greenish-gray with trace gravel.
(2.5Y 5/2) (continued) | | | | | | | | |
| 1872.5 | 37 | | | | | | | | | |
| 1871.5 | 38 | | | | | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 10
38-40 ft.
100% Rec. | | 7 | | | | |
| | | | | | | 9 | | | | |
| 1870.5 | 39 | | | | | 9 | | | | |
| | | | | | | 11 | | | | |
| 1869.5 | 40 | | | | | | | | | |
| 1868.5 | 41 | | | | | | | | | |
| 1867.5 | 42 | | | | | | | | | |
| 1866.5 | 43 | | | | | | | | | |
| | | (MH) ELASTIC SILT (95%): Low plasticity, low toughness, low dry strength, no dilatancy, very slightly moist, fine sand (5 %). (10YR 5/3)
Bottom of Borehole @ 43 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 12.4-43 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 11
43-45 ft.
100% Rec. | | 8 | | | | |
| 1865.5 | 44 | | | | | 8 | | | | |
| | | | | | | 10 | | | | |
| | | | | | | 12 | | | | |
| 1864.5 | 45 | | | | | | | | | |

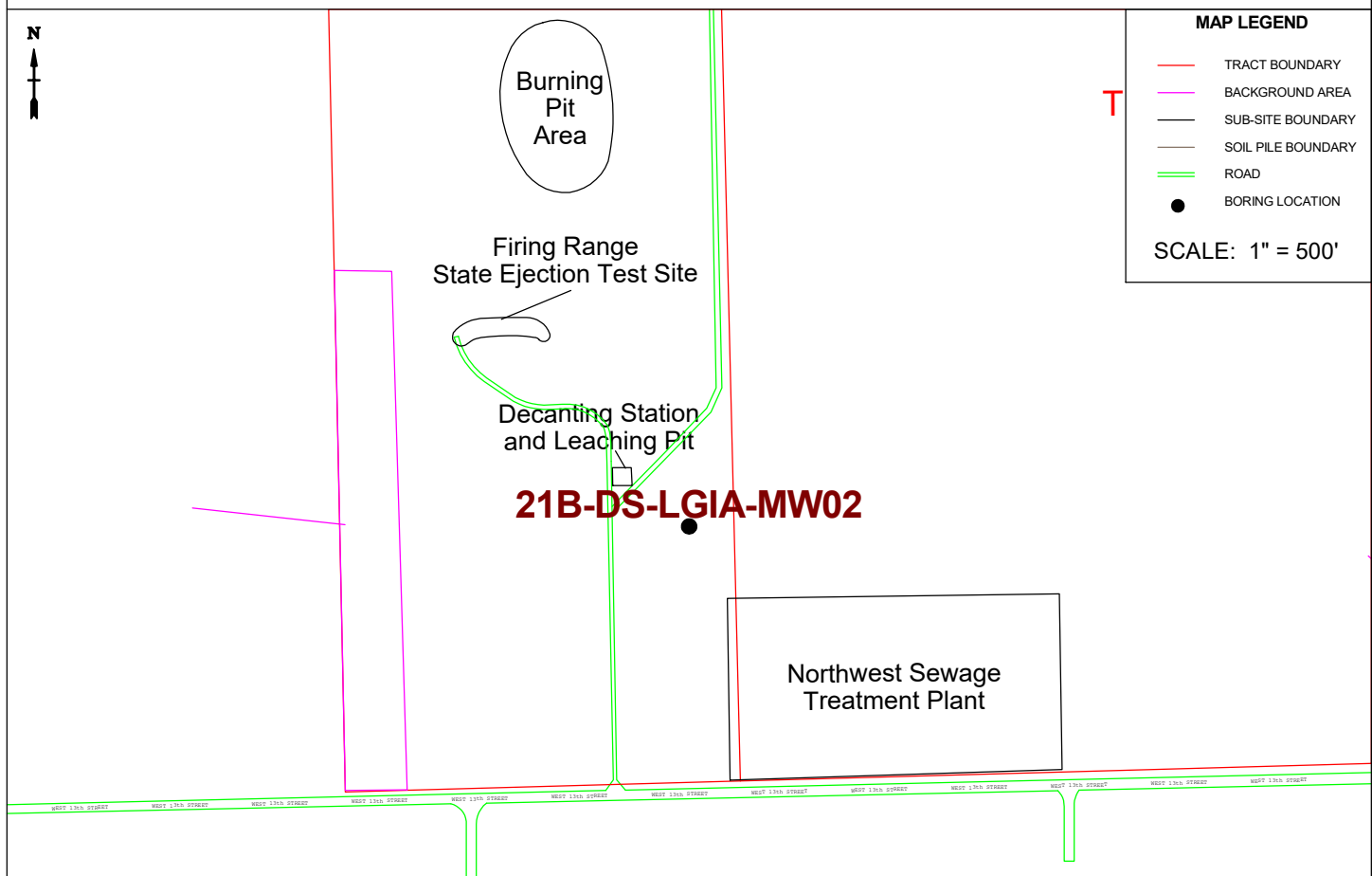
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW01

| | | | | | |
|--|-------------------|---|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-DS-LGIA-MW02 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET 1 OF 6 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
404237.4 North 2048964.4 East | | | |
| | | 9. SURFACE ELEVATION
1909.5' MSL | | | |
| | | 10. DATE STARTED
5/15/2018 | | 11. DATE COMPLETED
5/15/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
12 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
11.45 ft on 5/16/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
43.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
11.47 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW02

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1909.5 | 0 | Topsoil | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
0-2 ft.
100% Rec. | | 2 | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1908.5 | 1 | (CL) SILTY CLAY: Hard, dry, gray, low plasticity with high organics. (N 6/1) | | | | 3 | |
| | | | | | | 4 | |
| | | | | | | 6 | |
| 1907.5 | 2 | | | | | | |
| 1906.5 | 3 | (CL) CLAY: Medium stiff, dry, gray, low plasticity with trace fine-grained sand. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
3-5 ft.
100% Rec. | | 3 | |
| | | | | | | 3 | |
| 1905.5 | 4 | | | | | 4 | |
| | | | | | | 4 | |
| 1904.5 | 5 | | | | | | |
| | | | | | | | |
| 1903.5 | 6 | | | | | | |
| | | | | | | | |
| 1902.5 | 7 | | | | | | |
| | | | | | | | |
| 1901.5 | 8 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
8-10 ft.
100% Rec. | | W | |
| | | With iron staining. (2.5Y 5/2) | | | | 1 | |
| 1900.5 | 9 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW02

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW02

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1900.5 | 9 | With iron staining. (2.5Y 5/2) (continued) | | | | 1 | |
| | | | | | | 2 | |
| 1899.5 | 10 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
10-12 ft.
100% Rec. | | W | |
| | | | | | | W | |
| 1898.5 | 11 | | | | | 1 | |
| | | | | | | 2 | |
| 1897.5 | 12 | (SP) SAND: Medium dense, wet, light brown,
medium-grained. (2.5Y 5/3) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
12-14 ft.
100% Rec. | | 3 | |
| | | Becomes Dark Brown. (2.5Y 3/1) | | | | 4 | |
| 1896.5 | 13 | Becomes Light Brown . (2.5Y 5/3) | | | | 8 | |
| | | Becomes Dark Brown. (2.5Y 3/1) | | | | 8 | |
| 1895.5 | 14 | | | | | | |
| 1894.5 | 15 | | | | | | |
| 1893.5 | 16 | | | | | | |
| 1892.5 | 17 | | | | | | |
| 1891.5 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW02

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW02

| PROJECT | | DISTRICT | | ANALYTICAL | | | | SHEET | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|--|---------------------------------|-------------------|----------------|--|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | | 4 | | 6 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | | |
| 1891.5 | 18 | Becomes Dark Brown. (2.5Y 3/1) (continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
18-20 ft.
100% Rec. | | | 3 | | | | | | |
| | | | | | | | 4 | | | | | | |
| 1890.5 | 19 | | | | | | 6 | | | | | | |
| | | Becomes Brownish-gray. (2.5Y 5/2) | | | | | 6 | | | | | | |
| 1889.5 | 20 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 1888.5 | 21 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 1887.5 | 22 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 1886.5 | 23 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 7
23-25 ft.
100% Rec. | | | 1 | | | | | | |
| | | | | | | | 2 | | | | | | |
| 1885.5 | 24 | | | | | | 1 | | | | | | |
| | | | | | | | 2 | | | | | | |
| 1884.5 | 25 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 1883.5 | 26 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 1882.5 | 27 | | | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW02

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW02

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|--|--|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | 5 | | 6 | | SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1882.5 | 27 | Becomes Brownish-gray. (2.5Y 5/2)
(continued) | | | | | | | | | |
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| | | | | | | | | | | | |
| 1881.5 | 28 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 8
28-30 ft.
100% Rec. | | 4 | | | | | |
| | | | | | | 6 | | | | | |
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PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

21B-DS-LGIA-MW02

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW02

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 6 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1873.5 | 36 | Becomes Brownish-gray. (2.5Y 5/2)
(continued) | | | | | |
| 1872.5 | 37 | | | | | | |
| 1871.5 | 38 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 10
38-40 ft.
100% Rec. | | 4 | |
| | | | | | | 5 | |
| 1870.5 | 39 | | | | | 5 | |
| | | | | | | 6 | |
| 1869.5 | 40 | | | | | | |
| | | | | | | | |
| 1868.5 | 41 | | | | | | |
| | | | | | | | |
| 1867.5 | 42 | | | | | | |
| | | | | | | | |
| 1866.5 | 43 | (MH) ELASTIC SILT (95%): Low plasticity, low
toughness, low dry strength, no dilatancy, very
slightly moist, fine sand (5 %). (10YR 5/3) | | | | | |
| | | Bottom of Borehole @ 43 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 12.4-43 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 11
43-45 ft.
100% Rec. | | 6 | |
| 1865.5 | 44 | | | | | 8 | |
| | | | | | | 8 | |
| | | | | | | 10 | |
| 1864.5 | 45 | | | | | | |

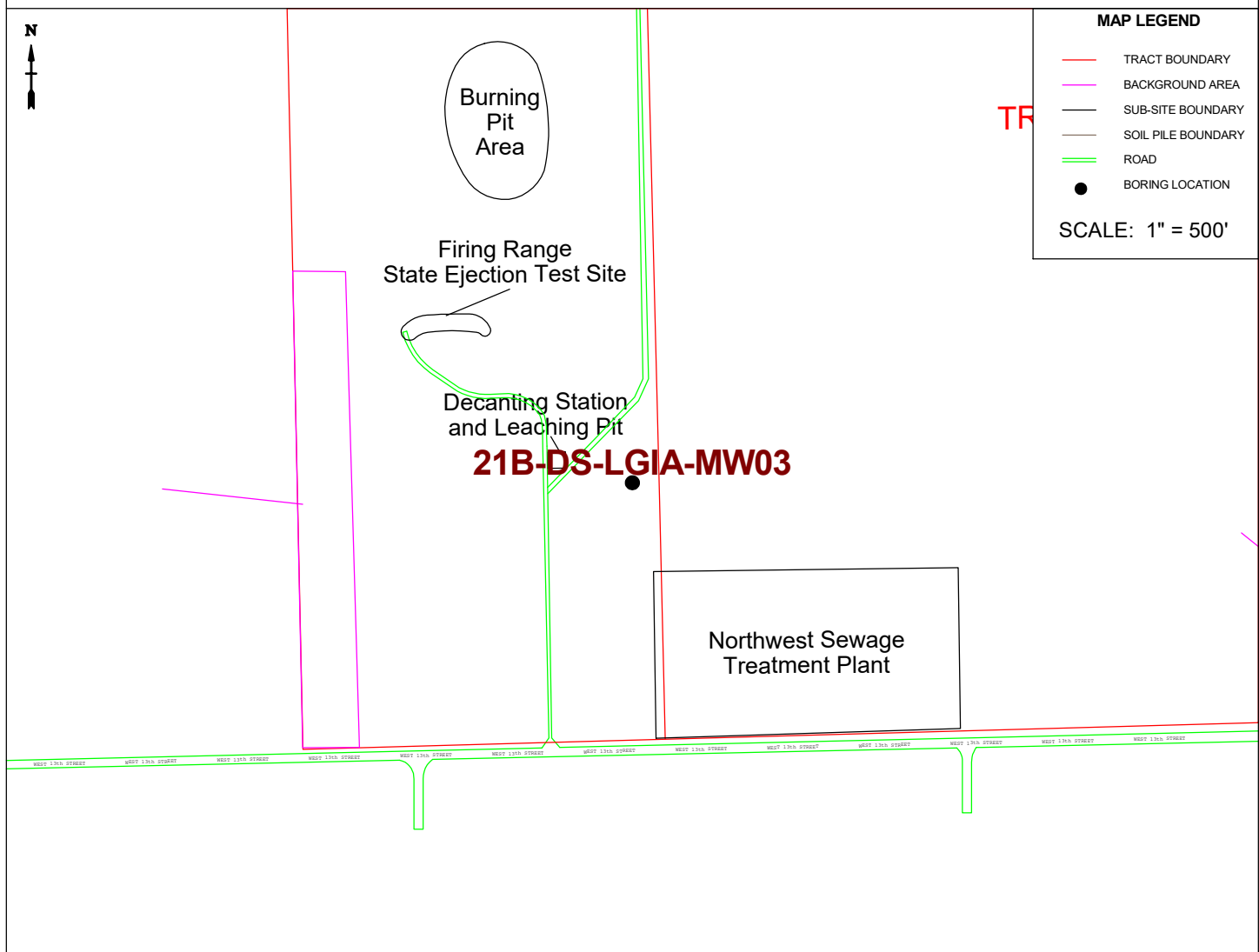
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW02

| | | | | | |
|--|-------------------|---|---------------------------------------|---------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-DS-LGIA-MW03 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 7 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
404306.1 North 2049006.4 East | | | |
| | | 9. SURFACE ELEVATION
1909.3' MSL | | | |
| | | 10. DATE STARTED
5/14/2018 | 11. DATE COMPLETED
5/14/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
14 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
11.42 ft on 5/16/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
45.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
11.24 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



| | | | |
|---------|------------------------------|---------|------------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 21B-DS-LGIA-MW03 |
|---------|------------------------------|---------|------------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW03

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|--|
| 1909.3 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1908.3 | 1 | (ML) CLAYEY SILT: Medium stiff, moist, dark gray, low plasticity, with organics. (2.5Y 4/3) | | | | | |
| 1907.3 | 2 | | | | | | |
| 1906.3 | 3 | | | | | | |
| 1905.3 | 4 | (CL) SILTY CLAY: Loose, wet, dark gray, low plasticity. (2.5Y 5/2) | | | | | |
| 1904.3 | 5 | | | | | | |
| | | Becomes soft. (2.5Y 5/2) | | | | | |
| 1903.3 | 6 | | | | | | |
| 1902.3 | 7 | | | | | | |
| 1901.3 | 8 | Becomes greenish/gray, medium plasticity. (5G 2/2) | | | | | |
| 1900.3 | 9 | | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

21B-DS-LGIA-MW03

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW03

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|-----------------------------------|--|---------------------------------|-------------------|----------------|
| 1900.3 | 9 | Becomes greenish/gray, medium plasticity.
(5G 2/2) (continued) | | | | | |
| 1899.3 | 10 | | | | | | |
| 1898.3 | 11 | With organics. (5G 2/2) | | | | | |
| 1897.3 | 12 | With iron staining. (5G 2/2) | | | | | |
| 1896.3 | 13 | Becomes soft, dark gray. (2.5Y 5/2) | | | | | |
| 1895.3 | 14 | (SP) POORLY GRADED SAND: Loose, wet,
medium-grained. (2.5Y 5/2) | | | | | |
| 1894.3 | 15 | | | | | | |
| 1893.3 | 16 | | | | | | |
| 1892.3 | 17 | | | | | | |
| 1891.3 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW03

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW03

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 4 | | 7 | | | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1891.3 | 18 | With trace gravel. (10YR 5/4) | | | | | | | | | |
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PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW03

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW03

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 5 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1882.3 | 27 | (SP) POORLY GRADED GRAVELLY SAND
(90%): Poorly sorted, poorly graded
sub-angular to angular, loose, wet, 10% fines.
. (N 2.5/1) (continued) | | | | | |
| 1881.3 | 28 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
28-30 ft.
100% Rec. | | 6 | |
| 1880.3 | 29 | | | | | 8 | |
| | | (CL) LEAN CLAY (90%): Low plasticity, low
toughness, medium dry strength, no dilatancy,
slightly moist, fine sand (10%). (5GY 4/1) | | | | 9 | |
| | | | | | | 11 | |
| 1879.3 | 30 | | | | | | |
| 1878.3 | 31 | | | | | | |
| 1877.3 | 32 | | | | | | |
| 1876.3 | 33 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
33-35 ft.
100% Rec. | | 7 | |
| | | | | | | 6 | |
| 1875.3 | 34 | | | | | 9 | |
| | | | | | | 11 | |
| 1874.3 | 35 | | | | | | |
| 1873.3 | 36 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW03

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW03

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 6 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1873.3 | 36 | (CL) LEAN CLAY (90%): Low plasticity, low toughness, medium dry strength, no dilatancy, slightly moist, fine sand (10%). (5GY 4/1)
(continued) | | | | | |
| 1872.3 | 37 | | | | | | |
| 1871.3 | 38 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
38-40 ft.
100% Rec. | | 7 | |
| 1870.3 | 39 | | | | | 8 | |
| 1869.3 | 40 | | | | | 8 | |
| 1868.3 | 41 | | | | | 9 | |
| 1867.3 | 42 | | | | | | |
| 1866.3 | 43 | (MH) ELASTIC SILT (95%): Low plasticity, low toughness, low dry strength, no dilatancy, very slightly moist, fine sand (5 %). (5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
43-45 ft.
100% Rec. | | 5 | |
| 1865.3 | 44 | | | | | 7 | |
| | | | | | | 8 | |
| | | | | | | 10 | |
| 1864.3 | 45 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW03

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


21B-DS-LGIA-MW03

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 7 OF 7 SHEETS | |
|--------------|--------------|---|--|-----------------------------------|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1864.3 | 45 | Bottom of Borehole @ 45 ft
100 Gallons of Water Lost During Drilling
Heaving Sands14-43 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | | |
| 1863.3 | 46 | | | | | | | | |
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| 1862.3 | 47 | | | | | | | | |
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| 1861.3 | 48 | | | | | | | | |
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| 1860.3 | 49 | | | | | | | | |
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| 1859.3 | 50 | | | | | | | | |
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| 1858.3 | 51 | | | | | | | | |
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| 1857.3 | 52 | | | | | | | | |
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| 1856.3 | 53 | | | | | | | | |
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| 1855.3 | 54 | | | | | | | | |

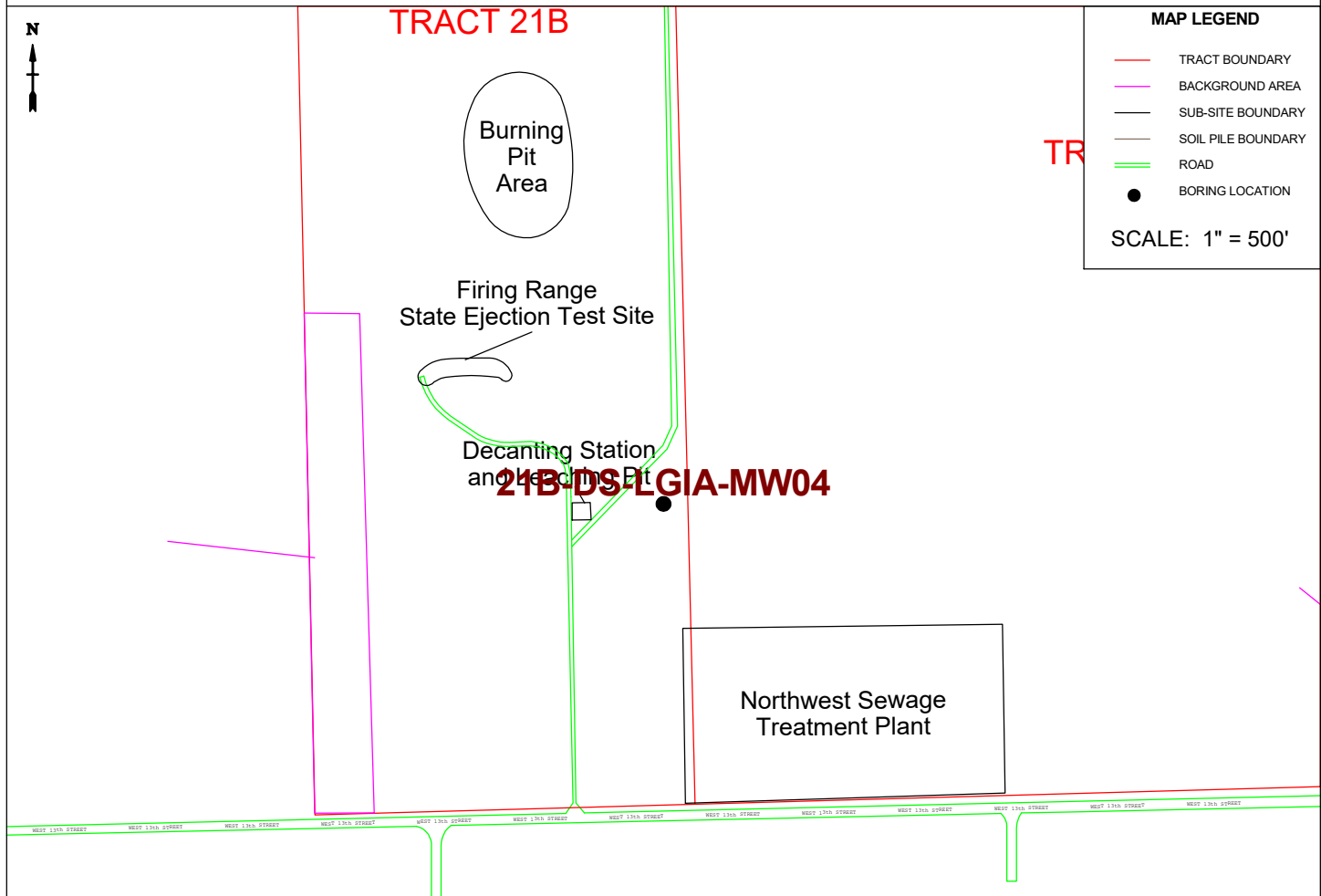
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW03

| | | | | | |
|--|-------------------|--|---------------------------------------|--|------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-DS-LGIA-MW04 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 6 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
404395.2 North 2049014.7 East | | | |
| | | 9. SURFACE ELEVATION
1909.2' MSL | | | |
| | | 10. DATE STARTED
5/14/2018 | | 11. DATE COMPLETED
5/14/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
12.25 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
11.4 ft on 5/15/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
44.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
11.07 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW04

| PROJECT | | DISTRICT | | SHEET | | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|---|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 2 | | | 6 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| 1909.2 | 0 | (CL) LEAN CLAY (90%): Low to medium plasticity, slightly moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained mottling. (5Y 6/2) | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery | | | |
| 1908.2 | 1 | | | | | | | | | |
| 1907.2 | 2 | | | | | | | | | |
| 1906.2 | 3 | | | | | | | | | |
| 1905.2 | 4 | | | | | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3.5-5.5 ft.
100% Rec. | | 3 | | | | |
| | | | | | | 5 | | | | |
| | | | | | | 8 | | | | |
| 1904.2 | 5 | | | | | 8 | | | | |
| 1903.2 | 6 | | | | | | | | | |
| 1902.2 | 7 | | | | | | | | | |
| 1901.2 | 8 | | | | | | | | | |
| | | | | | | | | | | |
| 1900.2 | 9 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
8.5-10.5 ft.
100% Rec. | | 1 | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW04

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW04

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 6 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1900.2 | 9 | (CL) LEAN CLAY (90%): Low to medium plasticity, slightly moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained mottling. (5Y 6/2) <i>(continued)</i> | | | | 3 | |
| 1899.2 | 10 | (CL) LEAN CLAY (90%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained mottling. (5Y 6/2) | | | | 3 | |
| 1898.2 | 11 | | | | | 5 | |
| 1897.2 | 12 | | | | | | |
| 1896.2 | 13 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | | |
| 1895.2 | 14 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
13.5-15.5 ft.
100% Rec. | | 2 | |
| 1894.2 | 15 | | | | | 2 | |
| | | | | | | 4 | |
| 1893.2 | 16 | | | | | 4 | |
| 1892.2 | 17 | | | | | | |
| 1891.2 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW04

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW04

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 4 OF 6 SHEETS | |
|--------------|--------------|---|--|--|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1891.2 | 18 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | | | | | | |
| | | | | | | | 6 | | |
| 1890.2 | 19 | | | | | | 8 | | |
| | | | | | | | 3 | | |
| 1889.2 | 20 | | | | | | 4 | | |
| | | | | | | | | | |
| 1888.2 | 21 | | | | | | | | |
| | | | | | | | | | |
| 1887.2 | 22 | | | | | | | | |
| | | | | | | | | | |
| 1886.2 | 23 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 1885.2 | 24 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
23.5-25.5 ft.
100% Rec. | | 7 | | |
| | | | | | | | 7 | | |
| | | | | | | | 8 | | |
| 1884.2 | 25 | | | | | | 9 | | |
| | | | | | | | | | |
| 1883.2 | 26 | | | | | | | | |
| | | | | | | | | | |
| 1882.2 | 27 | | | | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

21B-DS-LGIA-MW04

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW04

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | | SHEET 5 OF 6 SHEETS | |
|--------------|--------------|---|--|---|---------------------------------|-------------------|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1882.2 | 27 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | | | | | | |
| 1881.2 | 28 | | | | | | | | |
| 1880.2 | 29 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
28.5-30.5 ft.
100% Rec. | | 6 | | | |
| 1879.2 | 30 | | | | | 7 | | | |
| | | | | | | 7 | | | |
| 1878.2 | 31 | | | | | | | | |
| | | | | | | | | | |
| 1877.2 | 32 | | | | | | | | |
| | | | | | | | | | |
| 1876.2 | 33 | | | | | | | | |
| | | | | | | | | | |
| 1875.2 | 34 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 7
33.5-35.5 ft.
100% Rec. | | 8 | | | |
| | | | | | | 9 | | | |
| | | | | | | 10 | | | |
| 1874.2 | 35 | | | | | | | | |
| | | | | | | 11 | | | |
| 1873.2 | 36 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW04

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW04

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 6 OF 6 SHEETS | |
|--------------|--------------|---|--|--|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1873.2 | 36 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | | | | | | |
| 1872.2 | 37 | | | | | | | | |
| 1871.2 | 38 | | | | | | | | |
| 1870.2 | 39 | (SP) POORLY GRADED GRAVELLY SAND (90%): Poorly sorted, poorly graded sub-angular to angular, loose, wet, 10% fines. (N 2.5/1) | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 8
38.5-40.5 ft.
100% Rec. | | 9 | | |
| | | | | | | | 13 | | |
| | | | | | | | 14 | | |
| 1869.2 | 40 | | | | | | 18 | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 1868.2 | 41 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 1867.2 | 42 | (CL) LEAN CLAY (90%): Low plasticity, low toughness, medium dry strength, no dilatancy, slightly moist, fine sand (10%). (5GY 4/1) | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 9
42-44 ft.
100% Rec. | | 9 | | |
| | | | | | | | 18 | | |
| | | | | | | | 18 | | |
| 1866.2 | 43 | | | | | | 15 | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 1865.2 | 44 | | | | | | | | |
| | | Bottom of Borehole @ 44 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 12.25-42 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | | |
| 1864.2 | 45 | | | | | | | | |

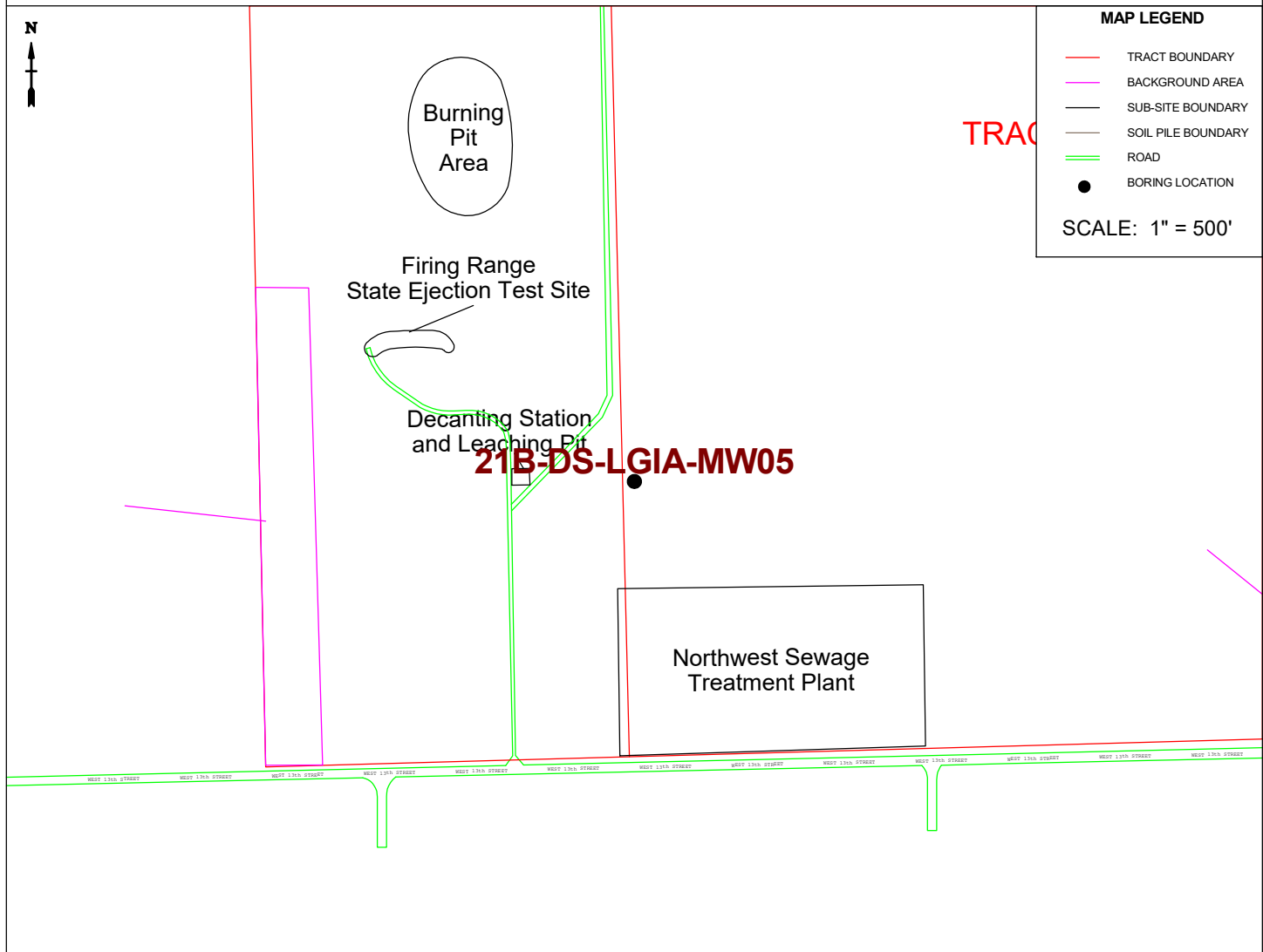
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW04

| | | | | | |
|--|-------------------|--|---------------------------------------|---------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-DS-LGIA-MW05 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 7 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
404360.4 North 2049119.8 East | | | |
| | | 9. SURFACE ELEVATION
1908.7' MSL | | | |
| | | 10. DATE STARTED
3/31/2018 | 11. DATE COMPLETED
3/31/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
12 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
10.93 ft on 4/8/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
45.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW05

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|--|
| 1908.7 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1907.7 | 1 | (CL) SILTY CLAY: Medium stiff, moist, light brown, low plasticity, with organics. (2.5Y 4/3) | | | | | |
| | | Becomes greenish-gray. (10G 4/1) | | | | | |
| 1906.7 | 2 | | | | | | |
| 1905.7 | 3 | Becomes light brown with trace medium-grained sand. (10YR 5/4) | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3.5-5.5 ft.
100% Rec. | | 2 | |
| 1904.7 | 4 | Becomes dark gray. (5YR 6/1) | | | | 4 | |
| | | | | | | 5 | |
| 1903.7 | 5 | | | | | 6 | |
| 1902.7 | 6 | | | | | | |
| 1901.7 | 7 | | | | | | |
| 1900.7 | 8 | Becomes greenish-gray, medium plasticity. (5G 2/2) | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
8.5-10.5 ft.
100% Rec. | | 2 | |
| 1899.7 | 9 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW05

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW05

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1899.7 | 9 | Becomes greenish-gray, medium plasticity.
(5G 2/2) (continued) | | | | 2 | |
| | | | | | | 3 | |
| 1898.7 | 10 | | | | | 4 | |
| | | | | | | | |
| 1897.7 | 11 | | | | | | |
| | | | | | | | |
| 1896.7 | 12 | (SM) SILTY SAND: Loose, wet, light brown,
fine to medium grained. (2.5Y 5/2) | | | | | |
| | | | | | | | |
| 1895.7 | 13 | | | | | | |
| | | | | | | | |
| 1894.7 | 14 | (SP) SAND: Loose, wet, light gray, fine to
medium grained, poorly graded. (2.5Y 5/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
13.5-15.5 ft.
100% Rec. | | 5 | |
| | | | | | | 7 | |
| | | | | | | 9 | |
| 1893.7 | 15 | | | | | 10 | |
| | | | | | | | |
| 1892.7 | 16 | | | | | | |
| | | | | | | | |
| 1891.7 | 17 | | | | | | |
| | | | | | | | |
| 1890.7 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW05

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW05

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 4 | | | | 7 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1890.7 | 18 | Becomes gray. (2.5Y 5/2) | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1889.7 | 19 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1888.7 | 20 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1887.7 | 21 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1886.7 | 22 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1885.7 | 23 | Becomes medium dense. (2.5Y 5/2) | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1884.7 | 24 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1883.7 | 25 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1882.7 | 26 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 1881.7 | 27 | | | | | | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

21B-DS-LGIA-MW05

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW05

| PROJECT | | | DISTRICT | | | SHEET | | OF | | SHEETS | |
|-------------------------------|--------------|---|---|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | | US Army Corps of Engineers - Omaha District | | | 5 | | 7 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1881.7 | 27 | (SW) MEDIUM GRADED CLEAN SAND (95%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 5% fines. (10G 4/1) | | | | | | | | | |
| 1880.7 | 28 | | | | | | | | | | |
| 1879.7 | 29 | | | | | | | | | | |
| 1878.7 | 30 | | | | | | | | | | |
| 1877.7 | 31 | | | | | | | | | | |
| 1876.7 | 32 | | | | | | | | | | |
| 1875.7 | 33 | | | | | | | | | | |
| 1874.7 | 34 | | | | | | | | | | |
| 1873.7 | 35 | | | | | | | | | | |
| 1872.7 | 36 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW05

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW05

| PROJECT | | DISTRICT | | ANALYTICAL | | SHEET | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | 6 | | 7 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1872.7 | 36 | (SW) MEDIUM GRADED CLEAN SAND (95%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 5% fines. (10G 4/1) (continued) | | | | | | | | | |
| 1871.7 | 37 | | | | | | | | | | |
| 1870.7 | 38 | | | | | | | | | | |
| 1869.7 | 39 | (SW) MEDIUM GRADED CLEAN SAND (95%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 5% fines. (10G 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
38.5-40.5 ft.
100% Rec. | | 8 | | | | | |
| | | | | | | 12 | | | | | |
| | | | | | | 14 | | | | | |
| 1868.7 | 40 | | | | | 16 | | | | | |
| 1867.7 | 41 | (SW) MEDIUM GRADED CLEAN SAND (95%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 5% fines. (10G 4/1) | | | | | | | | | |
| | | | | | | | | | | | |
| 1866.7 | 42 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1865.7 | 43 | (SW) MEDIUM GRADED CLEAN SAND (95%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 5% fines. (10G 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
43-45 ft.
100% Rec. | | 6 | | | | | |
| | | (MH) ELASTIC SILT (95%): Low plasticity, low toughness, low dry strength, no dilatancy, very slightly moist, fine sand (5 %). (5Y 5/2) | | | | 7 | | | | | |
| 1864.7 | 44 | | | | | 10 | | | | | |
| | | | | | | 15 | | | | | |
| 1863.7 | 45 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW05

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW05

| PROJECT | | DISTRICT | | SHEET | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 7 | | | 7 | | 7 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| 1863.7 | 45 | Bottom of Borehole @ 45 ft
100 Gallons of Water Lost During Drilling
Heaving Sands12-43.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | | | |
| 1862.7 | 46 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1861.7 | 47 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1860.7 | 48 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1859.7 | 49 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1858.7 | 50 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1857.7 | 51 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1856.7 | 52 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1855.7 | 53 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1854.7 | 54 | | | | | | | | | |

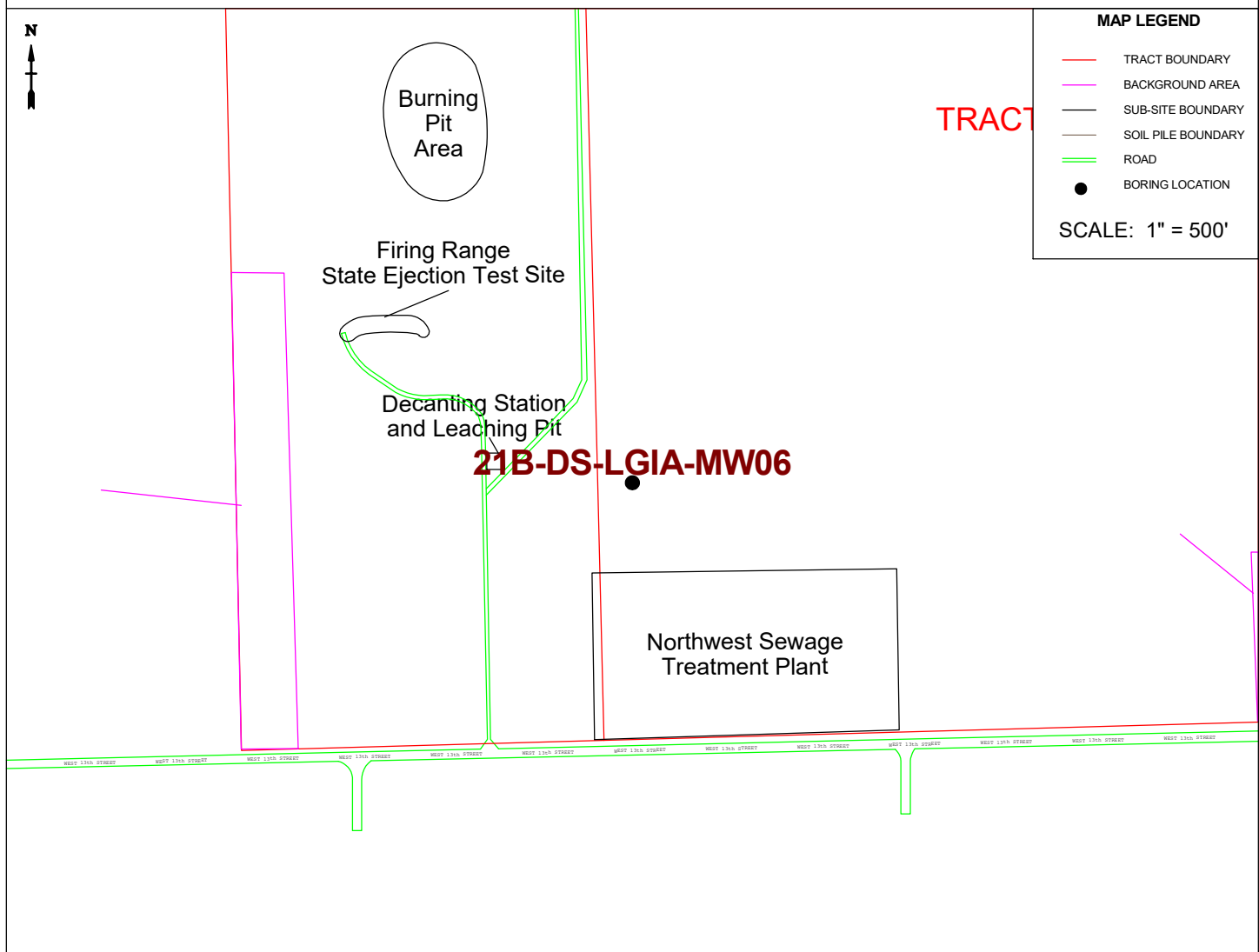
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW05

| | | | | | |
|--|-------------------|--|---------------------------------------|---------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-DS-LGIA-MW06 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 7 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
404309.9 North 2049190.3 East | | | |
| | | 9. SURFACE ELEVATION
1909.0' MSL | | | |
| | | 10. DATE STARTED
3/31/2018 | 11. DATE COMPLETED
3/31/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
12 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
11.16 ft on 4/7/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
45.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



| | | | |
|---------|------------------------------|---------|------------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 21B-DS-LGIA-MW06 |
|---------|------------------------------|---------|------------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW06

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | SHEET 2 OF 7 SHEETS | |
|--------------|--------------|--|-----------------------------------|---|---------------------------------|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1909.0 | 0 | Topsoil | | | | | | |
| 1908.0 | 1 | (SC) CLAYEY SAND: Loose, moist, light gray,
fine grained. (2.5Y 4/3)
Becomes very loose. (10G 4/1) | | | | | | |
| 1907.0 | 2 | | | | | | | |
| 1906.0 | 3 | (CL) SILTY CLAY: Medium stiff, moist, gray,
medium plasticity. (5YR 7/1) | | | | | | |
| 1905.0 | 4 | | | | | | | |
| 1904.0 | 5 | | | | | | | |
| 1903.0 | 6 | | | | | | | |
| 1902.0 | 7 | | | | | | | |
| 1901.0 | 8 | Becomes dark gray. (5YR 6/1) | | | | | | |
| 1900.0 | 9 | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW06

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW06

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|
| 1900.0 | 9 | Becomes dark gray. (5YR 6/1) <i>(continued)</i> | | | | | |
| 1899.0 | 10 | | | | | | |
| 1898.0 | 11 | | | | | | |
| 1897.0 | 12 | (SP) SAND: Loose, wet, light gray, fine grained, with iron staining. (2.5Y 5/2) | | | | | |
| 1896.0 | 13 | | | | | | |
| 1895.0 | 14 | Becomes medium dense, greenish gray. (5G 2/2) | | | | | |
| 1894.0 | 15 | Becomes coarse grained with trace gravel. (2.5Y 5/2) | | | | | |
| 1893.0 | 16 | | | | | | |
| 1892.0 | 17 | | | | | | |
| 1891.0 | 18 | | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

21B-DS-LGIA-MW06

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW06

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 4 | | 7 | | | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1891.0 | 18 | Becomes coarse grained with trace gravel.
(2.5Y 5/2) (continued) | | | | | | | | | |
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PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW06

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW06

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|--|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 5 | | | | 7 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1882.0 | 27 | (SW) MEDIUM GRADED CLEAN SAND
(95%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 5% fines.
(10G 4/1) | | | | | | | | | |
| 1881.0 | 28 | | | | | | | | | | |
| 1880.0 | 29 | | | | | | | | | | |
| 1879.0 | 30 | | | | | | | | | | |
| 1878.0 | 31 | | | | | | | | | | |
| 1877.0 | 32 | | | | | | | | | | |
| 1876.0 | 33 | | | | | | | | | | |
| 1875.0 | 34 | | | | | | | | | | |
| 1874.0 | 35 | | | | | | | | | | |
| 1873.0 | 36 | | | | | | | | | | |
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PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

21B-DS-LGIA-MW06

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW06

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 6 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|--|--|---------------------------------|-------------------|----------------|
| 1873.0 | 36 | (SW) MEDIUM GRADED CLEAN SAND
(95%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 5% fines.
(10G 4/1) (continued) | | | | | |
| 1872.0 | 37 | | | | | | |
| 1871.0 | 38 | | | | | | |
| 1870.0 | 39 | (SW) MEDIUM GRADED CLEAN SAND
(95%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 5% fines.
(10G 4/1) | | | | | |
| 1869.0 | 40 | | | | | | |
| 1868.0 | 41 | (SW) MEDIUM GRADED CLEAN SAND
(95%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 5% fines.
(10G 4/1) | | | | | |
| 1867.0 | 42 | | | | | | |
| 1866.0 | 43 | (SW) MEDIUM GRADED CLEAN SAND
(95%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 5% fines.
(10G 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
43-45 ft.
100% Rec. | | 5 | |
| 1865.0 | 44 | (CL) LEAN CLAY (90%): Low to medium
plasticity, medium toughness, medium dry
strength, no dilatancy, slightly moist, fine sand
(10%). (5GY 4/1) | | | | 8 | |
| | | | | | | 13 | |
| | | | | | | 16 | |
| 1864.0 | 45 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW06

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


21B-DS-LGIA-MW06

| PROJECT | | DISTRICT | | SHEET | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 7 | | | 7 | | 7 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| 1864.0 | 45 | Bottom of Borehole @ 45 ft
100 Gallons of Water Lost During Drilling
Heaving Sands11.5-43.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | | | |
| 1863.0 | 46 | | | | | | | | | |
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| 1862.0 | 47 | | | | | | | | | |
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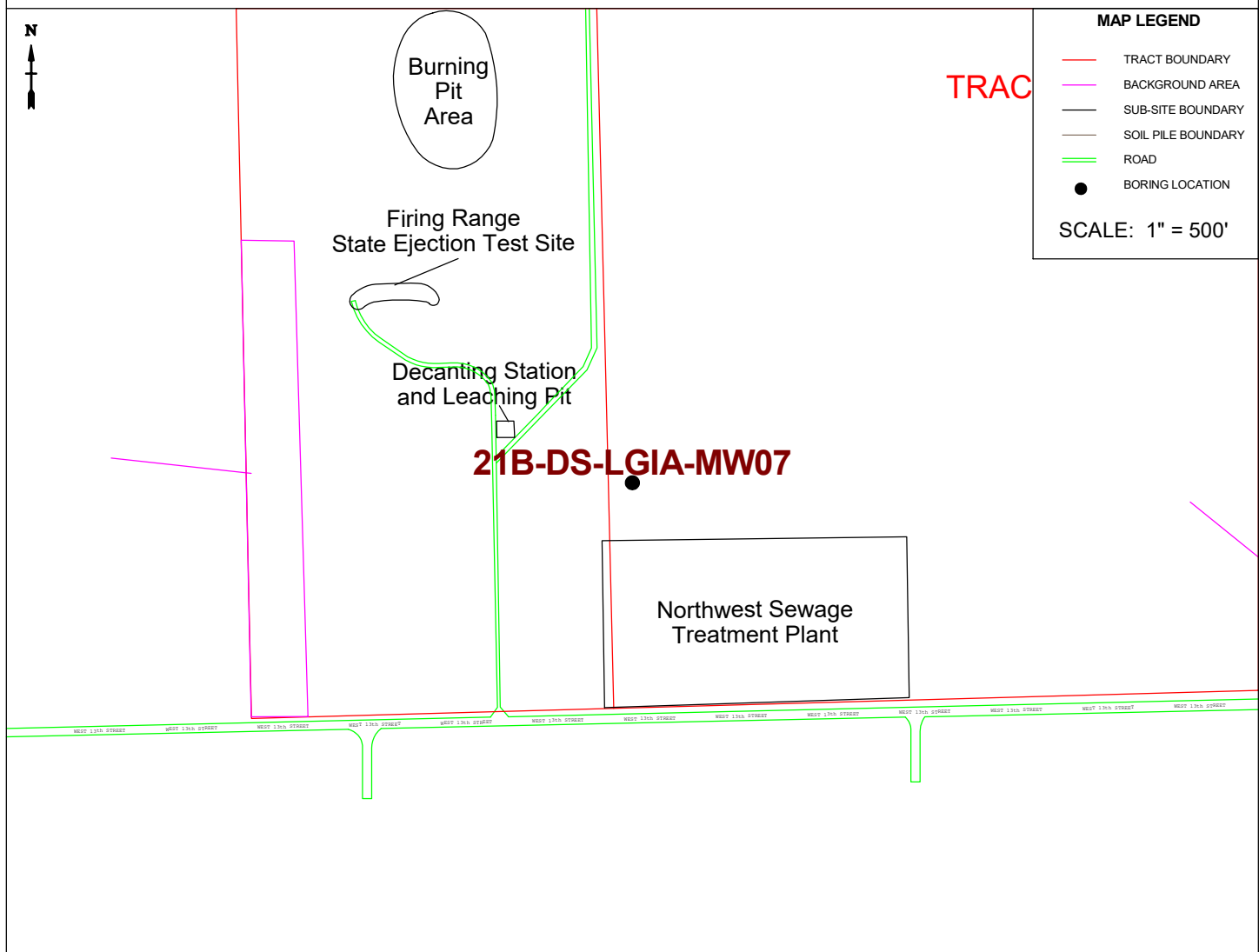
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW06

| | | | | | |
|--|-------------------|--|---------------------------------------|--|----------------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-DS-LGIA-MW07 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET 1 OF 7 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Central Mining Equipment 55 High-Torque | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
404213.9 North 2049160.4 East | | | |
| | | 9. SURFACE ELEVATION
1909.8' MSL | | | |
| | | 10. DATE STARTED
3/31/2018 | | 11. DATE COMPLETED
3/31/2018 | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED
12 Feet Below the Ground Surface | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
12.16 ft on 4/7/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
45.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
N/A | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | | 21. TOTAL CORE RECOVERY
N/A % |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW07

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|--|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 2 | | OF | | 7 | | SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1909.8 | 0 | Topsoil | | | | | | | | | |
| 1908.8 | 1 | (CL) SILTY CLAY: Medium stiff, moist, light brown, low plasticity, with organics. (2.5Y 4/3) | | | | | | | | | |
| 1907.8 | 2 | | | | | | | | | | |
| 1906.8 | 3 | (SP) SAND: Loose, wet, light gray, fine to medium grained, poorly graded. (10G 4/1) | | | | | | | | | |
| 1905.8 | 4 | | | | | | | | | | |
| 1904.8 | 5 | | | | | | | | | | |
| 1903.8 | 6 | | | | | | | | | | |
| 1902.8 | 7 | | | | | | | | | | |
| 1901.8 | 8 | Becomes very loose. (10G 4/1) | | | | | | | | | |
| 1900.8 | 9 | | | | | | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

21B-DS-LGIA-MW07

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW07

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|--|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 3 | | 7 | | | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1900.8 | 9 | Becomes medium dense. (10G 4/1) | | | | | | | | | |
| 1899.8 | 10 | | | | | | | | | | |
| 1898.8 | 11 | | | | | | | | | | |
| 1897.8 | 12 | | | | | | | | | | |
| 1896.8 | 13 | | | | | | | | | | |
| 1895.8 | 14 | | | | | | | | | | |
| 1894.8 | 15 | | | | | | | | | | |
| 1893.8 | 16 | | | | | | | | | | |
| 1892.8 | 17 | | | | | | | | | | |
| 1891.8 | 18 | | | | | | | | | | |
| | | Becomes medium to coarse grained with coarse organics. (10G 4/1) | | | | | | | | | |
| | | Becomes dark brown. (5YR 5/3) | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW07

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW07

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|--|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | | | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1891.8 | 18 | Becomes dark brown. (5YR 5/3) (continued) | | | | | | | | | |
| 1890.8 | 19 | | | | | | | | | | |
| 1889.8 | 20 | Becomes fine to medium grained. (5YR 5/3) | | | | | | | | | |
| 1888.8 | 21 | | | | | | | | | | |
| 1887.8 | 22 | | | | | | | | | | |
| 1886.8 | 23 | Becomes loose, light gray, poorly graded. (10G 4/1) | | | | | | | | | |
| 1885.8 | 24 | Becomes coarse grained. (10G 4/1) | | | | | | | | | |
| | | Becomes fine grained with trace coarse sand. (10G 4/1) | | | | | | | | | |
| 1884.8 | 25 | Becomes fine grained with trace coarse sand. (10G 4/1) | | | | | | | | | |
| 1883.8 | 26 | | | | | | | | | | |
| 1882.8 | 27 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW07

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW07

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 5 | | 7 | | | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1882.8 | 27 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10G 4/1) | | | | | | | | | |
| 1881.8 | 28 | | | | | | | | | | |
| 1880.8 | 29 | | | | | | | | | | |
| 1879.8 | 30 | | | | | | | | | | |
| 1878.8 | 31 | | | | | | | | | | |
| 1877.8 | 32 | | | | | | | | | | |
| 1876.8 | 33 | | | | | | | | | | |
| 1875.8 | 34 | | | | | | | | | | |
| 1874.8 | 35 | | | | | | | | | | |
| 1873.8 | 36 | | | | | | | | | | |
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PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW07

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW07

| PROJECT | | DISTRICT | | ANALYTICAL | | | SHEET | |
|-------------------------------|--------------|---|--|--|-------------------|---------------------|----------------|---|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | S. Cameron | | | 6 | 7 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1873.8 | 36 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10G 4/1)
(continued) | | | | | | |
| 1872.8 | 37 | | | | | | | |
| 1871.8 | 38 | | | | | | | |
| 1870.8 | 39 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10G 4/1) | | | | | | |
| 1869.8 | 40 | | | | | | | |
| 1868.8 | 41 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10G 4/1) | | | | | | |
| 1867.8 | 42 | | | | | | | |
| 1866.8 | 43 | | | | | | | |
| 1865.8 | 44 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10G 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
43.5-45.5 ft.
100% Rec. | | 6

6

9 | | |
| 1864.8 | 45 | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW07

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW07

| PROJECT | | Grand Island, Nebraska | | DISTRICT | | CHAAP | | US Army Corps of Engineers - Omaha District | | SHEET 7 OF 7 SHEETS | |
|--------------|--------------|--|--|----------|-----------------------------------|--|---------------------------------|---|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1864.8 | 45 | (MH) ELASTIC SILT (95%): Low plasticity, low toughness, low dry strength, no dilatancy, very slightly moist, fine sand (5 %). (5Y 5/2) | | | | | | 15 | | | |
| 1863.8 | 46 | Bottom of Borehole @ 45.5 ft
100 Gallons of Water Lost During Drilling
Heaving Sands2.5-45 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | | | | |
| 1862.8 | 47 | | | | | | | | | | |
| 1861.8 | 48 | | | | | | | | | | |
| 1860.8 | 49 | | | | | | | | | | |
| 1859.8 | 50 | | | | | | | | | | |
| 1858.8 | 51 | | | | | | | | | | |
| 1857.8 | 52 | | | | | | | | | | |
| 1856.8 | 53 | | | | | | | | | | |
| 1855.8 | 54 | | | | | | | | | | |

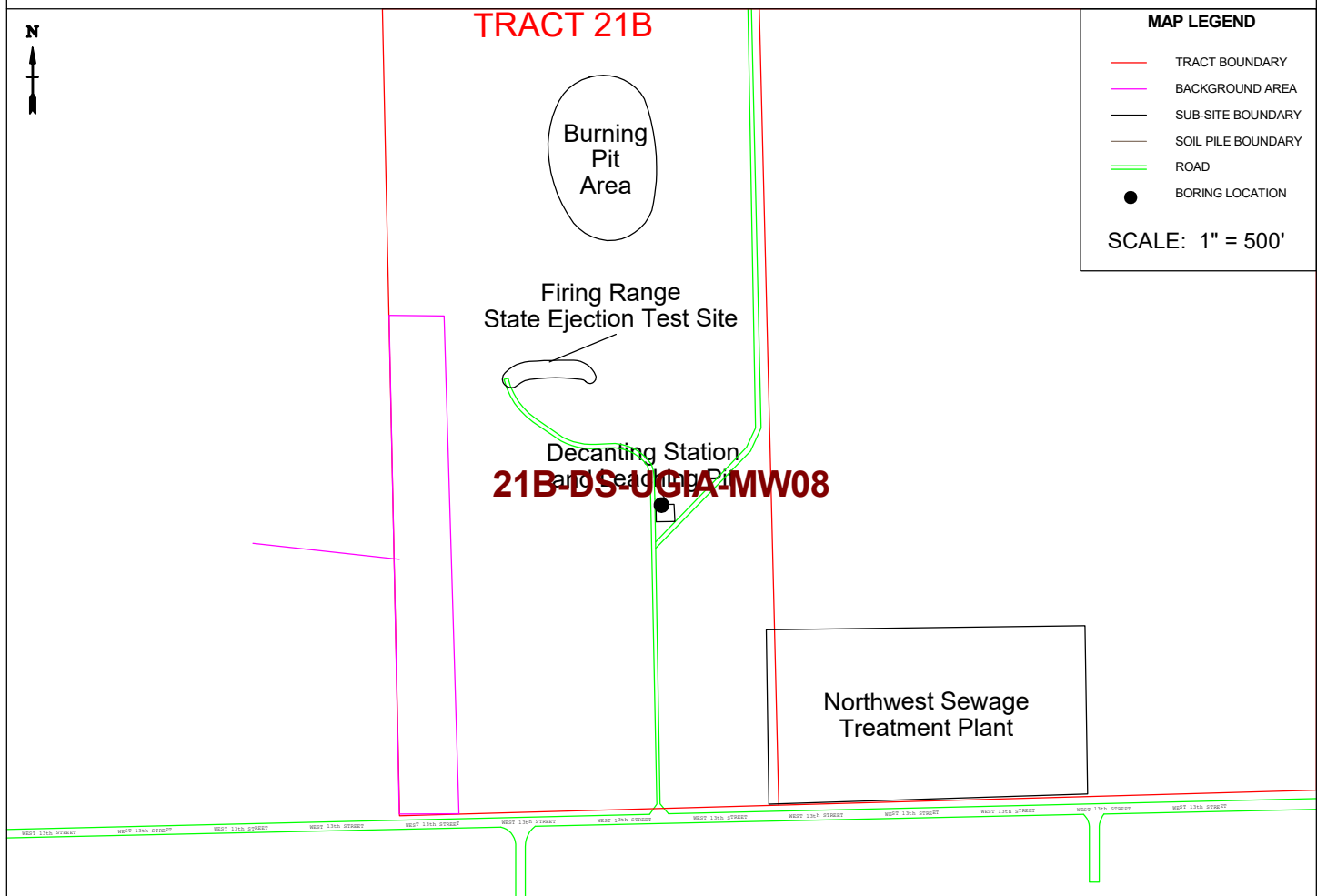
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW07

| | | | | | |
|--|-------------------|---|---------------------------------------|---------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-DS-UGIA-MW08 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Mobile 57 | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
404397.0 North 2048769.5 East | | | |
| | | 9. SURFACE ELEVATION
1910.0' MSL | | | |
| | | 10. DATE STARTED
7/19/2018 | 11. DATE COMPLETED
7/19/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
13.39 ft on 7/20/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
20.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
13.08 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-UGIA-MW08

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 2 OF 4 SHEETS | |
|--------------|--------------|---|--|---|---------------------------------|---------------------|---|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1910.0 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery |
| 1909.0 | 1 | | | | | | |
| 1908.0 | 2 | | | | | | |
| 1907.0 | 3 | | | | | | |
| | | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3-5 ft.
100% Rec. | | 4 | |
| | | | | | | 3 | |
| 1906.0 | 4 | | | | | 3 | |
| | | | | | | 4 | |
| 1905.0 | 5 | | | | | | |
| 1904.0 | 6 | | | | | | |
| 1903.0 | 7 | | | | | | |
| 1902.0 | 8 | | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
8-10 ft.
100% Rec. | | 2 | |
| | | 1 | | | | | |
| 1901.0 | 9 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-UGIA-MW08

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-UGIA-MW08

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 3 OF 4 SHEETS | |
|--------------|--------------|--|--|--|---------------------------------|---|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1901.0 | 9 | Same as above with increased plasticity and moisture. (2.5Y 3/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
10-12 ft.
100% Rec. | | 2 | | | |
| | | | | | | 2 | | | |
| 1900.0 | 10 | | | | | 1 | | | |
| | | | | | | 2 | | | |
| 1899.0 | 11 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
12-14 ft.
100% Rec. | | 3 | | | |
| | | | | | | 8 | | | |
| 1898.0 | 12 | | | | | 8 | | | |
| | | | | | | 7 | | | |
| 1897.0 | 13 | | | | | 8 | | | |
| | | | | | | 9 | | | |
| 1896.0 | 14 | | | | | | | | |
| | | | | | | | | | |
| 1895.0 | 15 | | | | | | | | |
| | | | | | | | | | |
| 1894.0 | 16 | | | | | | | | |
| | | | | | | | | | |
| 1893.0 | 17 | | | | | | | | |
| | | | | | | | | | |
| 1892.0 | 18 | | | | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

21B-DS-UGIA-MW08

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-UGIA-MW08

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 4 OF 4 SHEETS | |
|--------------|--------------|---|--|--|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1892.0 | 18 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
18-20 ft.
100% Rec. | | 6 | | |
| | 8 | | | | | | | | |
| 1891.0 | 19 | | | | | | 9 | | |
| | | | | | | | 9 | | |
| 1890.0 | 20 | | | | | | | | |
| | | | | | | | | | |
| 1889.0 | 21 | Bottom of Borehole @ 20.5 ft
10 Gallons of Water Lost During Drilling
Heaving Sands12-20.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | |
| 1888.0 | 22 | | | | | | | | |
| 1887.0 | 23 | | | | | | | | |
| 1886.0 | 24 | | | | | | | | |
| 1885.0 | 25 | | | | | | | | |
| 1884.0 | 26 | | | | | | | | |
| 1883.0 | 27 | | | | | | | | |

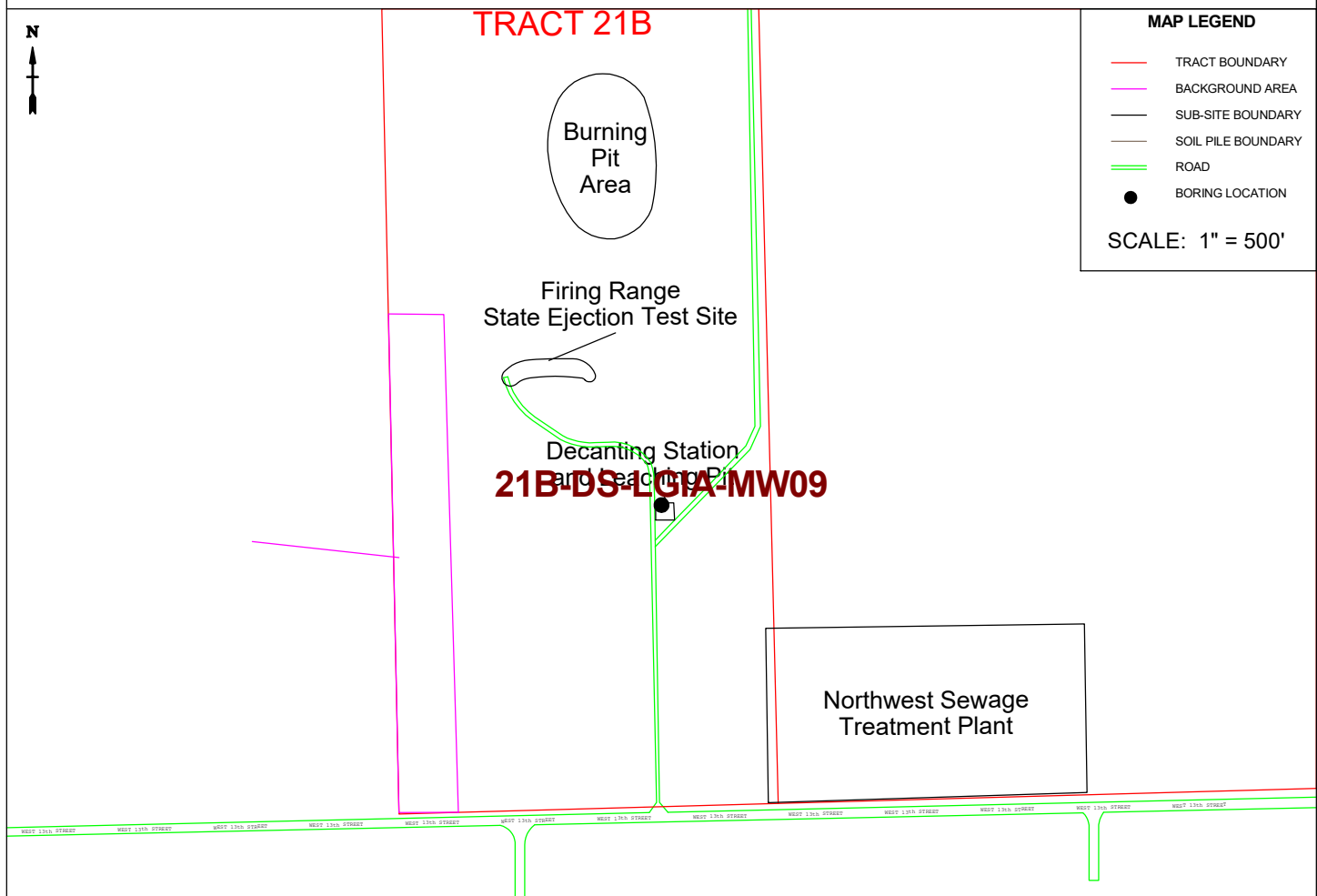
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-UGIA-MW08

| | | | | | |
|--|-------------------|---|---------------------------------------|---------------------------------|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-DS-LGIA-MW09 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 7 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Mobile 57 | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
404392.5 North 2048770.8 East | | | |
| | | 9. SURFACE ELEVATION
1910.0' MSL | | | |
| | | 10. DATE STARTED
7/19/2018 | 11. DATE COMPLETED
7/19/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
13.11 ft on 7/20/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
46.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
13.09 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 21. TOTAL CORE RECOVERY
N/A % | | | | | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW09

| PROJECT | | DISTRICT | | ANALYTICAL | | | SHEET | |
|-------------------------------|--------------|---|--|--|--|-------------------|--|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | 2 OF 7 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | | BLOW COUNT
(g) | REMARKS
(h) | |
| 1910.0 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery | |
| 1909.0 | 1 | | | | | | | |
| 1908.0 | 2 | | | | | | | |
| 1907.0 | 3 | | | | | | | |
| | | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3-5 ft.
100% Rec. | | 4 | | |
| | | | | | | 3 | | |
| 1906.0 | 4 | | | | | 3 | | |
| | | | | | | 4 | | |
| 1905.0 | 5 | | | | | | | |
| 1904.0 | 6 | | | | | | | |
| 1903.0 | 7 | | | | | | | |
| 1902.0 | 8 | | | | | 2 | | |
| | | | | | | 1 | | |
| 1901.0 | 9 | | | | | | | |

PROJECT

CHAAP Grand Island, Nebraska

HOLE NO

21B-DS-LGIA-MW09

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW09

| PROJECT | | DISTRICT | | HOLE NO | | | | SHEET | | OF | | SHEETS | |
|------------------------------|--------------|---|--|--|--|---------------------------------|-------------------|----------------|--|----|--|--------|--|
| CHAAP Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 21B-DS-LGIA-MW09 | | | | 3 | | 7 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | | |
| 1901.0 | 9 | Same as above with increased plasticity and moisture. (2.5Y 3/1) | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
10-12 ft.
100% Rec. | | 2 | | | | | | |
| | 2 | | | | | | | | | | | | |
| 1900.0 | 10 | | | | | | 1 | | | | | | |
| | | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
12-14 ft.
100% Rec. | | 2 | | | | | | |
| 1899.0 | 11 | | | | | | 3 | | | | | | |
| | | | | | | | 8 | | | | | | |
| 1898.0 | 12 | | | | | | 8 | | | | | | |
| | | | | | | | 7 | | | | | | |
| 1897.0 | 13 | | | | | | 8 | | | | | | |
| | | | | | | | 9 | | | | | | |
| 1896.0 | 14 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 1895.0 | 15 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 1894.0 | 16 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 1893.0 | 17 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 1892.0 | 18 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW09

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG

S. Cameron

HOLE NUMBER
21B-DS-LGIA-MW09

SHEET 4 OF 7 SHEETS

| | | | |
|---------|------------------------------|---------|------------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 21B-DS-LGIA-MW09 |
|---------|------------------------------|---------|------------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW09

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 5 OF 7 SHEETS | |
|--------------|--------------|---|--|--|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1883.0 | 27 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | | | | | | |
| 1882.0 | 28 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 7
28-30 ft.
100% Rec. | | 9 | | |
| 1881.0 | 29 | | | | | | 10 | | |
| | | | | | | | 8 | | |
| | | | | | | | 9 | | |
| 1880.0 | 30 | | | | | | | | |
| 1879.0 | 31 | | | | | | | | |
| 1878.0 | 32 | | | | | | | | |
| 1877.0 | 33 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 8
33-35 ft.
100% Rec. | | 7 | | |
| | | | | | | | 9 | | |
| 1876.0 | 34 | | | | | | 10 | | |
| | | | | | | | 9 | | |
| 1875.0 | 35 | | | | | | | | |
| 1874.0 | 36 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW09

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW09

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 6 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1874.0 | 36 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | |
| 1873.0 | 37 | | | | | | |
| 1872.0 | 38 | | | | | | |
| 1871.0 | 39 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 9
39-41 ft.
100% Rec. | | 8 | |
| 1870.0 | 40 | | | | | 8 | |
| | | | | | | 9 | |
| | | | | | | 10 | |
| 1869.0 | 41 | | | | | | |
| 1868.0 | 42 | | | | | | |
| 1867.0 | 43 | (MH) ELASTIC SILT (95%): Low plasticity, low
toughness, low dry strength, no dilatancy, very
slightly moist, fine sand (5 %). (5GY 5/1) | | | | | |
| 1866.0 | 44 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 10
44-46 ft.
100% Rec. | | 7 | |
| 1865.0 | 45 | | | | | 6 | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW09

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW09

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District


SHEET 7 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|--|-----------------------------------|--|---------------------------------|-------------------|----------------|
| 1865.0 | 45 | (MH) ELASTIC SILT (95%): Low plasticity, low toughness, low dry strength, no dilatancy, very slightly moist, fine sand (5 %). (5GY 5/1)
(continued) | | | | 6 | |
| 1864.0 | 46 | | | | | 7 | |
| 1863.0 | 47 | Bottom of Borehole @ 46 ft
100 Gallons of Water Lost During Drilling
Heaving Sands 12-43 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | |
| 1862.0 | 48 | | | | | | |
| 1861.0 | 49 | | | | | | |
| 1860.0 | 50 | | | | | | |
| 1859.0 | 51 | | | | | | |
| 1858.0 | 52 | | | | | | |
| 1857.0 | 53 | | | | | | |
| 1856.0 | 54 | | | | | | |

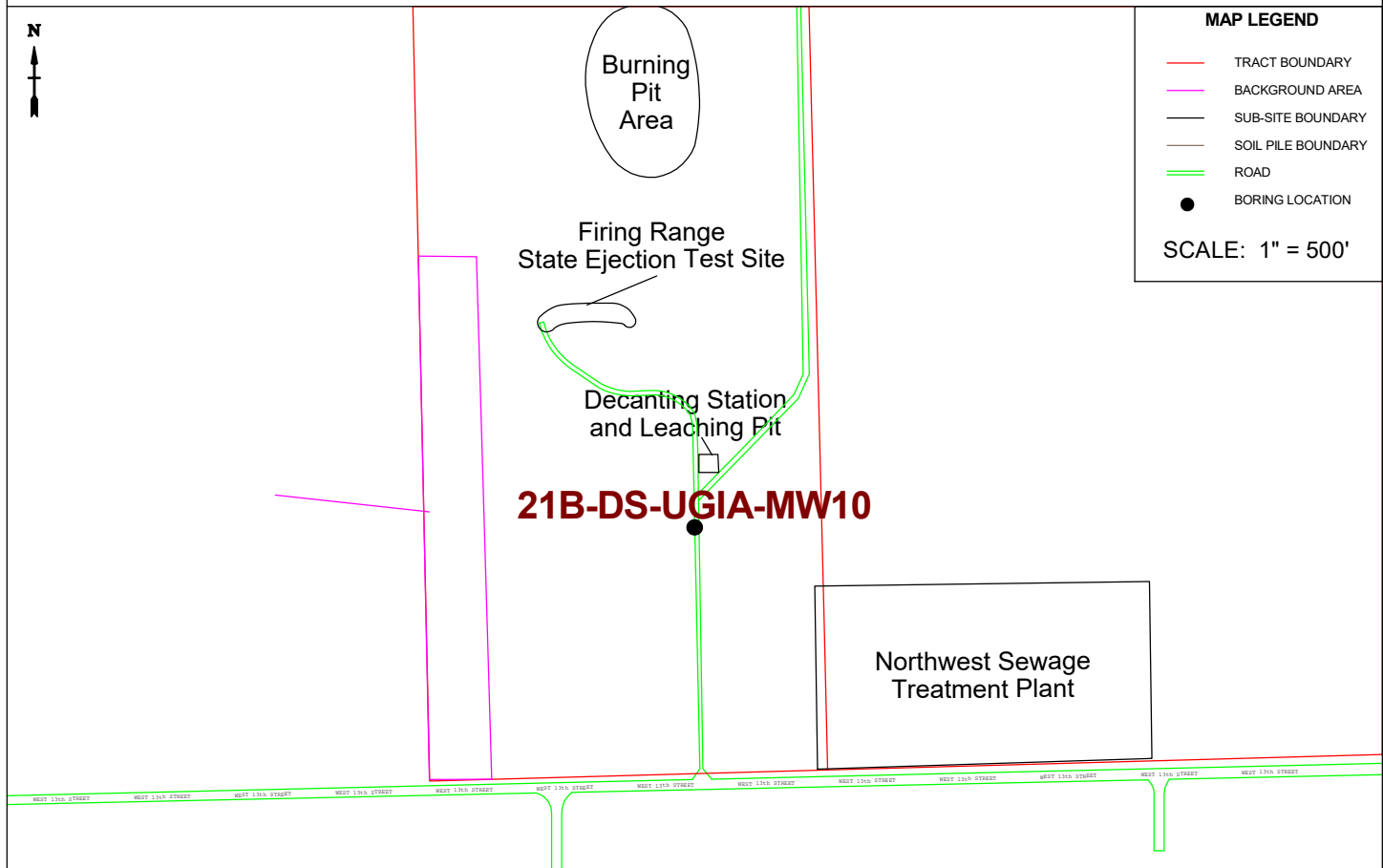
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW09

| | | | | | |
|--|-------------------|---|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-DS-UGIA-MW10 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET 1 OF 4 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Mobile 57 | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
404199.9 North 2048742.2 East | | | |
| | | 9. SURFACE ELEVATION
1910.0' MSL | | | |
| | | 10. DATE STARTED
7/19/2018 | 11. DATE COMPLETED
7/19/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
13.39 ft on 7/20/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
20.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
12.74 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-UGIA-MW10

| PROJECT | | DISTRICT | | ANALYTICAL | | | SHEET | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|---|--|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | 2 | | 4 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | | |
| 1910.0 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery | | | | | |
| 1909.0 | 1 | | | | | | | | | | | |
| 1908.0 | 2 | | | | | | | | | | | |
| 1907.0 | 3 | | | | | | | | | | | |
| 1906.0 | 4 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3.5-5.5 ft.
100% Rec. | | 6 | | | | | | |
| | | | | | | 7 | | | | | | |
| | | | | | | 8 | | | | | | |
| 1905.0 | 5 | | | | | 7 | | | | | | |
| 1904.0 | 6 | | | | | | | | | | | |
| 1903.0 | 7 | | | | | | | | | | | |
| 1902.0 | 8 | | | | | | | | | | | |
| 1901.0 | 9 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
8.5-10.5 ft.
100% Rec. | | 4 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-UGIA-MW10

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-UGIA-MW10

| PROJECT | | CHAAP, Grand Island, Nebraska | | DISTRICT | | US Army Corps of Engineers - Omaha District | | SHEET 3 OF 4 SHEETS | |
|--------------|--------------|---|--|--|--|---|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1901.0 | 9 | Same as above with increased plasticity and moisture. (2.5Y 3/1) | | | | | 3 | | |
| | 3 | | | | | | | | |
| 1900.0 | 10 | | | | | | 2 | | |
| | | (MH) ELASTIC SILT (95%): Low plasticity, low toughness, low dry strength, no dilatancy, very slightly moist, fine sand (5 %). (10Y 3/1) | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
10.5-12.5 ft.
100% Rec. | | 4 | | |
| 1899.0 | 11 | | | | | | 5 | | |
| | | | | | | | 8 | | |
| 1898.0 | 12 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
12-14 ft.
100% Rec. | | 8 | 10 | |
| | | | | | | | 7 | | |
| 1897.0 | 13 | | | | | | 9 | 10 | |
| | | | | | | | | | |
| 1896.0 | 14 | | | | | | | | |
| | | | | | | | | | |
| 1895.0 | 15 | | | | | | | | |
| | | | | | | | | | |
| 1894.0 | 16 | | | | | | | | |
| | | | | | | | | | |
| 1893.0 | 17 | | | | | | | | |
| | | | | | | | | | |
| 1892.0 | 18 | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-UGIA-MW10

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-UGIA-MW10

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | | SHEET 4 OF 4 SHEETS | |
|--------------|--------------|---|--|---|---------------------------------|-------------------|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1892.0 | 18 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
18-20 ft.
100% Rec. | | 10 | | | |
| | 10 | | | | | | | | |
| 1891.0 | 19 | | | | | 11 | | | |
| | 12 | | | | | | | | |
| 1890.0 | 20 | | | | | | | | |
| | | Bottom of Borehole @ 20 ft
10 Gallons of Water Lost During Drilling
Heaving Sands11.5-20 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | |
| 1889.0 | 21 | | | | | | | | |
| | | | | | | | | | |
| 1888.0 | 22 | | | | | | | | |
| | | | | | | | | | |
| 1887.0 | 23 | | | | | | | | |
| | | | | | | | | | |
| 1886.0 | 24 | | | | | | | | |
| | | | | | | | | | |
| 1885.0 | 25 | | | | | | | | |
| | | | | | | | | | |
| 1884.0 | 26 | | | | | | | | |
| | | | | | | | | | |
| 1883.0 | 27 | | | | | | | | |

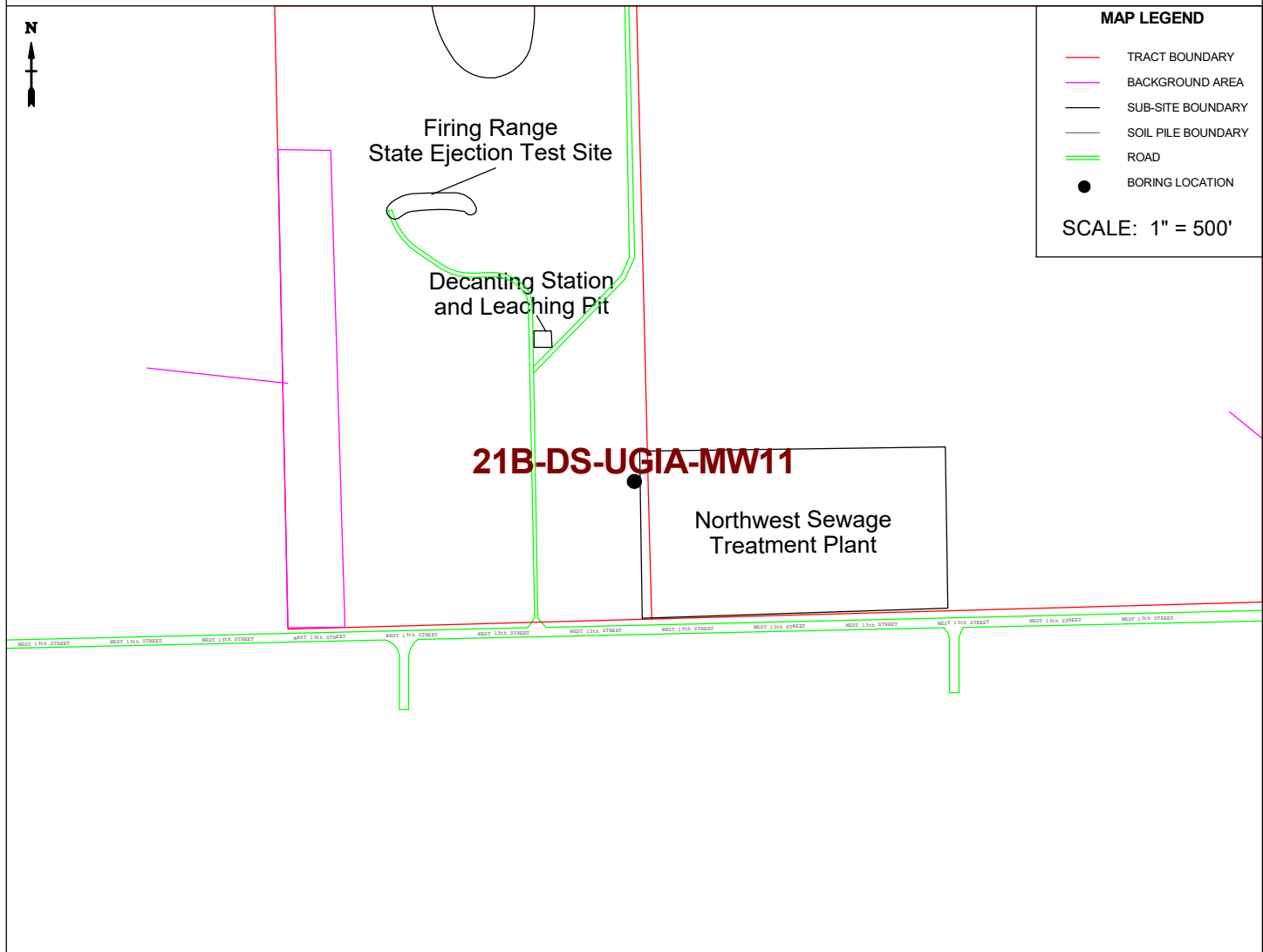
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-UGIA-MW10

| | | | | | |
|--|------------------|---|---------------------------------------|----------------------------------|----------------------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-DS-UGIA-MW11 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 4 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Mobile 57 | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
403949.0 North 2049053.6 East | | | |
| | | 9. SURFACE ELEVATION
1910.1' MSL | | | |
| | | 10. DATE STARTED
7/18/2018 | 11. DATE COMPLETED
7/18/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
12.84 ft on 7/19/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
22.0 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
12.38 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 21. TOTAL CORE RECOVERY
N/A % |
| 23. SIGNATURE OF INSPECTOR | | | | | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-UGIA-MW11

| PROJECT | | DISTRICT | | ANALYTICAL | | | | SHEET | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|--|---------------------------------|-------------------|---|--|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | | 2 | | 4 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | | |
| 1910.1 | 0 | Topsoil | | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec.- Sample Recovery | | | | | |
| 1909.1 | 1 | | | | | | | | | | | | |
| 1908.1 | 2 | | | | | | | | | | | | |
| 1907.1 | 3 | | | | | | | | | | | | |
| 1906.1 | 4 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3.5-5.5 ft.
100% Rec. | | 2 | | | | | | |
| | | | | | | | 3 | | | | | | |
| | | | | | | | 3 | | | | | | |
| 1905.1 | 5 | | | | | | 4 | | | | | | |
| 1904.1 | 6 | | | | | | | | | | | | |
| 1903.1 | 7 | | | | | | | | | | | | |
| 1902.1 | 8 | | | | | | | | | | | | |
| 1901.1 | 9 | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
8.5-10.5 ft.
100% Rec. | | 2 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-UGIA-MW11

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-UGIA-MW11

| PROJECT | CHAAP, Grand Island, Nebraska | DISTRICT | US Army Corps of Engineers - Omaha District | | | | SHEET 3 OF 4 SHEETS |
|--------------|-------------------------------|---|---|--|---------------------------------|-------------------|---------------------|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1901.1 | 9 | Same as above with increased plasticity and moisture. (2.5Y 3/1) | | | | 3 | |
| | | | | | | 4 | |
| 1900.1 | 10 | | | | | 4 | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1899.1 | 11 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
10.5-12.5 ft.
100% Rec. | | 3 | |
| | | Same as above becoming wet. | | | | 3 | |
| | | | | | | 3 | |
| | | | | | | | |
| 1898.1 | 12 | | | | | 3 | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1897.1 | 13 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
12.5-14.5 ft.
100% Rec. | | 4 | |
| | | (MH) ELASTIC SILT (95%): Low plasticity, low toughness, low dry strength, no dilatancy, very slightly moist, fine sand (5 %). (10Y 3/1) | | | | 2 | |
| | | | | | | 3 | |
| 1896.1 | 14 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | 7 | |
| | | | | | | | |
| 1895.1 | 15 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1894.1 | 16 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1893.1 | 17 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1892.1 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-UGIA-MW11

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


21B-DS-UGIA-MW11

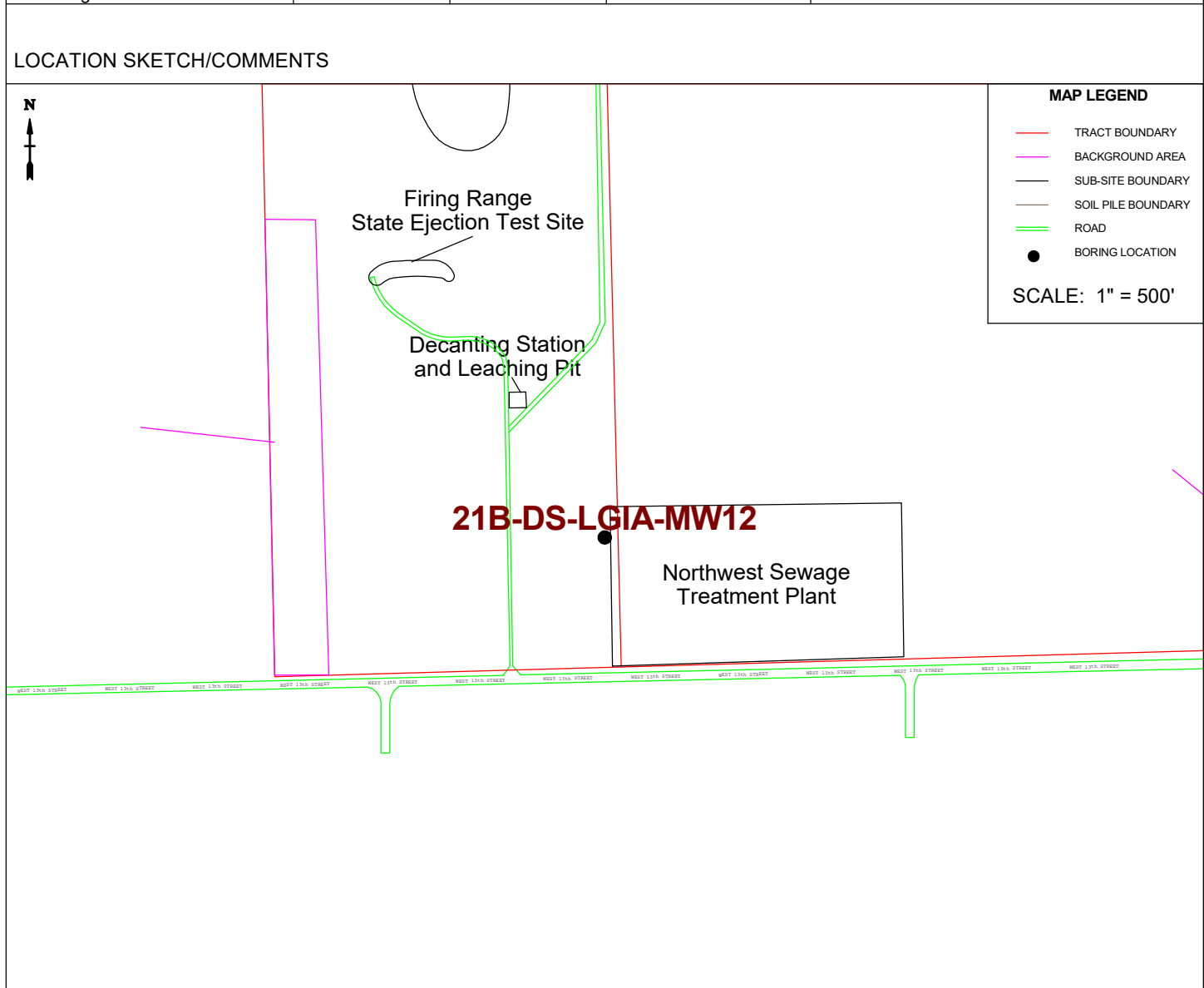
| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|----------------|----|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 4 | | 4 | | 4 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1892.1 | 18 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
18.5-20.5 ft.
100% Rec. | | 7 | | | | | |
| 1891.1 | 19 | | | | | 8 | | | | | |
| | | | | | | 9 | | | | | |
| 1890.1 | 20 | | | | | 8 | | | | | |
| | | | | | | | | | | | |
| 1889.1 | 21 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1888.1 | 22 | | | | | | | | | | |
| | | Bottom of Borehole @ 22 ft
10 Gallons of Water Lost During Drilling
Heaving Sands13.7-22 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
5 Lbs Portland Grout | | | | | | | | | |
| 1887.1 | 23 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1886.1 | 24 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1885.1 | 25 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1884.1 | 26 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1883.1 | 27 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-UGIA-MW11

| | | | | | |
|--|-------------------|---|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-DS-LGIA-MW12 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET 1 OF 7 SHEETS |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Mobile 57 | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
403943.6 North 2049053.0 East | | | |
| | | 9. SURFACE ELEVATION
1910.0' MSL | | | |
| | | 10. DATE STARTED
7/18/2018 | 11. DATE COMPLETED
7/18/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
12.61 ft on 7/19/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
45.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
12.41 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |



(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW12

| PROJECT | | DISTRICT | | ANALYTICAL | | | SHEET | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|--|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | | | | 2 OF 7 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1910.0 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery | |
| 1909.0 | 1 | | | | | | | |
| 1908.0 | 2 | | | | | | | |
| 1907.0 | 3 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3-5 ft.
100% Rec. | | 2 | | |
| 1906.0 | 4 | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | | | | 3 | | |
| 1905.0 | 5 | | | | | 3 | | |
| 1904.0 | 6 | | | | | 4 | | |
| 1903.0 | 7 | | | | | | | |
| 1902.0 | 8 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
8-10 ft.
100% Rec. | | 2 | | |
| 1901.0 | 9 | | | | | 3 | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW12

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW12

| PROJECT | CHAAP, Grand Island, Nebraska | DISTRICT | US Army Corps of Engineers - Omaha District | | | | SHEET 3 OF 7 SHEETS | |
|--------------|-------------------------------|---|---|--|---------------------------------|-------------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| 1901.0 | 9 | Same as above with increased plasticity and moisture. (2.5Y 3/1) | | | | 4 | | |
| | | | | | | 4 | | |
| 1900.0 | 10 | | | | | 3 | | |
| | | Same as above becoming wet. | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
10-12 ft.
100% Rec. | | 3 | | |
| 1899.0 | 11 | | | | | 3 | | |
| | | | | | | 3 | | |
| 1898.0 | 12 | (MH) ELASTIC SILT (95%): Low plasticity, low toughness, low dry strength, no dilatancy, very slightly moist, fine sand (5 %). (10Y 3/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
12-14 ft.
100% Rec. | | 4 | | |
| | | | | | | 2 | | |
| 1897.0 | 13 | | | | | 3 | | |
| | | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | | | | 7 | | |
| 1896.0 | 14 | | | | | | | |
| | | | | | | | | |
| 1895.0 | 15 | | | | | | | |
| | | | | | | | | |
| 1894.0 | 16 | | | | | | | |
| | | | | | | | | |
| 1893.0 | 17 | | | | | | | |
| | | | | | | | | |
| 1892.0 | 18 | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW12

HTRW DRILLING LOG

S. Cameron

HOLE NUMBER
21B-DS-LGIA-MW12

SHEET 4 OF 7 SHEETS

| | | | |
|---------|------------------------------|---------|------------------|
| PROJECT | CHAAP Grand Island, Nebraska | HOLE NO | 21B-DS-LGIA-MW12 |
|---------|------------------------------|---------|------------------|

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW12

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 5 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1883.0 | 27 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | |
| 1882.0 | 28 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 7
28-30 ft.
100% Rec. | | 5 | |
| 1881.0 | 29 | | | | | 6
5
8 | |
| 1880.0 | 30 | | | | | | |
| 1879.0 | 31 | | | | | | |
| 1878.0 | 32 | | | | | | |
| 1877.0 | 33 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 8
33-35 ft.
100% Rec. | | 6
7
9
10 | |
| 1876.0 | 34 | | | | | | |
| 1875.0 | 35 | | | | | | |
| 1874.0 | 36 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW12

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW12

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 6 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1874.0 | 36 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | |
| 1873.0 | 37 | | | | | | |
| 1872.0 | 38 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 9
38-40 ft.
100% Rec. | | 5 | |
| 1871.0 | 39 | | | | | 8 | |
| 1870.0 | 40 | | | | | 10 | |
| | | | | | | 11 | |
| 1869.0 | 41 | | | | | | |
| 1868.0 | 42 | | | | | | |
| 1867.0 | 43 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 10
43-45 ft.
100% Rec. | | 7 | |
| | | | | | | 18 | |
| 1866.0 | 44 | | | | | 18 | |
| | | | | | | 11 | |
| 1865.0 | 45 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW12

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER


21B-DS-LGIA-MW12

| PROJECT | | Grand Island, Nebraska | | DISTRICT | | CHAAP | | US Army Corps of Engineers - Omaha District | | SHEET 7 OF 7 SHEETS | |
|--------------|--------------|---|--|----------|-----------------------------------|--|---------------------------------|---|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | | | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1865.0 | 45 | (MH) ELASTIC SILT (95%): Low plasticity, low toughness, low dry strength, no dilatancy, very slightly moist, fine sand (5 %). (5GY 5/1) | | | | | | | | | |
| 1864.0 | 46 | Bottom of Borehole @ 45.5 ft
100 Gallons of Water Lost During Drilling
Heaving Sands13.7-45 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | | | | |
| 1863.0 | 47 | | | | | | | | | | |
| 1862.0 | 48 | | | | | | | | | | |
| 1861.0 | 49 | | | | | | | | | | |
| 1860.0 | 50 | | | | | | | | | | |
| 1859.0 | 51 | | | | | | | | | | |
| 1858.0 | 52 | | | | | | | | | | |
| 1857.0 | 53 | | | | | | | | | | |
| 1856.0 | 54 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

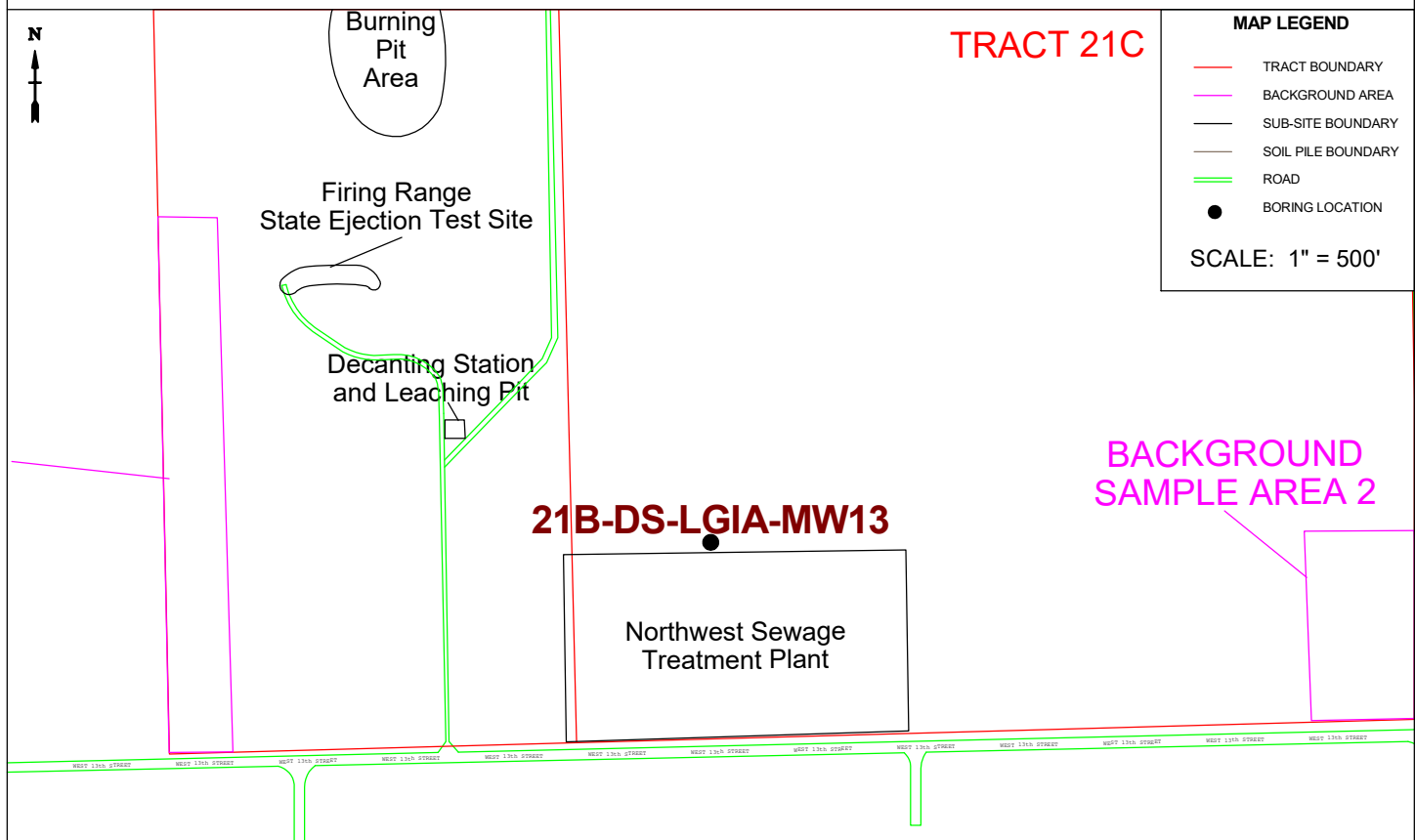
PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW12

| | | | | | |
|--|-------------------|---|---------------------------------------|--|-----------------------|
| HTRW DRILLING LOG | | DISTRICT
US Army Corps of Engineers - Omaha District | | HOLE NUMBER
21B-DS-LGIA-MW13 | |
| 1. COMPANY NAME
ATI / HGL | | 2. DRILLING CONTRACTOR
GSI | | | SHEET
1 OF 7 |
| 3. PROJECT
CHAAP | | 4. LOCATION
Grand Island, Nebraska | | | |
| 5. NAME OF DRILLER
J. Tinnell | | 6. MANUFACTURER'S DESIGNATION OF DRILL
Mobile 57 | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

4-1/2 inch ID HSA, 2 inch OD/2 ft long split spoon samplers. Augers, spoons & drilling equipment decontaminated before use. 8 inch Nominal borehole diameter. | | 8. HOLE LOCATION
404072.4 North 2049462.1 East | | | |
| | | 9. SURFACE ELEVATION
1909.3' MSL | | | |
| | | 10. DATE STARTED
7/21/2018 | 11. DATE COMPLETED
7/21/2018 | | |
| 12. OVERBURDEN THICKNESS
N/A | | 15. DEPTH GROUNDWATER ENCOUNTERED | | | |
| 13. DEPTH DRILLED INTO ROCK
N/A | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
12.56 ft on 7/22/2018 | | | |
| 14. TOTAL DEPTH OF HOLE
45.5 Feet Below the Ground Surface | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
13.04 ft (Upon BH Completion) | | | |
| 18. GEOTECHNICAL SAMPLES
0 | DISTURBED
N/A | UNDISTURBED
N/A | 19. TOTAL NUMBER OF CORE BOXES
--- | | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
0 | VOC
NA | METALS
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA | OTHER (SPECIFY)
NA |
| | | | | 21. TOTAL CORE RECOVERY
N/A % | |
| 22. DISPOSITION OF HOLE
Cuttings Stored in Rolloff | BACKFILLED
N/A | MONITORING WELL
YES | OTHER (SPECIFY)
Well Borehole | 23. SIGNATURE OF INSPECTOR  | |

LOCATION SKETCH/COMMENTS



HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW13

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 2 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|--|
| 1909.3 | 0 | Topsoil | | | | | HS - Headspace
BZ - Breathing Zone
BK - Background
SS - Split Spoon
Rec. - Sample Recovery |
| 1908.3 | 1 | | | | | | |
| 1907.3 | 2 | | | | | | |
| 1906.3 | 3 | | | | | | |
| 1905.3 | 4 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 1
3.5-5.5 ft.
100% Rec. | | 2 | |
| | | (CL) LEAN CLAY (88%): Low to medium plasticity, moist, high dry strength, medium toughness, 10% fine sand, no dilatancy, iron-stained coarse-sand sized clasts (2%). (2.5Y 6/2) | | | | 2 | |
| | | | | | | 3 | |
| 1904.3 | 5 | | | | | 4 | |
| 1903.3 | 6 | | | | | | |
| 1902.3 | 7 | | | | | | |
| | | Same as above with increased plasticity and moisture. (2.5Y 3/1) | | | | | |
| 1901.3 | 8 | | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 2
8.5-10.5 ft.
100% Rec. | | 3 | |
| 1900.3 | 9 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW13

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW13

PROJECT CHAAP, Grand Island, Nebraska

DISTRICT

US Army Corps of Engineers - Omaha District

SHEET 3 OF 7 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|--|--|---------------------------------|-------------------|----------------|
| 1900.3 | 9 | Same as above with increased plasticity and moisture. (2.5Y 3/1) (<i>continued</i>) | | | | 2 | |
| | | | | | | 4 | |
| 1899.3 | 10 | | | | | 2 | |
| | | Same as above becoming wet. | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 3
10.5-12.5 ft.
100% Rec. | | 3 | |
| 1898.3 | 11 | | | | | 5 | |
| | | | | | | 6 | |
| 1897.3 | 12 | (MH) ELASTIC SILT (95%): Low plasticity, low toughness, low dry strength, no dilatancy, very slightly moist, fine sand (5 %). (10Y 3/1) | | | | 7 | |
| | | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 4
12.5-14.5 ft.
100% Rec. | | 6 | |
| 1896.3 | 13 | | | | | 8 | |
| | | | | | | 7 | |
| 1895.3 | 14 | | | | | 8 | |
| 1894.3 | 15 | | | | | | |
| 1893.3 | 16 | | | | | | |
| 1892.3 | 17 | | | | | | |
| 1891.3 | 18 | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW13

(CONTINUATION SHEET)

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW13

| PROJECT | | DISTRICT | | SHEET | | | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|----------------|--------|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 4 | | 7 | | SHEETS | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | | |
| 1891.3 | 18 | (SW) MEDIUM GRADED CLEAN SAND
(85%): Poorly sorted, medium to very coarse
grained, sub-angular, loose, wet, 10% well
rounded coarse gravel, 5% fines. (10Y 4/1)
(continued) | | | | | | | | | |
| | | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 5
18.5-20.5 ft.
100% Rec. | | 7 | | | | | |
| 1890.3 | 19 | | | | | 7 | | | | | |
| | | | | | | 9 | | | | | |
| 1889.3 | 20 | | | | | 9 | | | | | |
| | | | | | | | | | | | |
| 1888.3 | 21 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1887.3 | 22 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1886.3 | 23 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1885.3 | 24 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 6
23.5-25.5 ft.
100% Rec. | | 8 | | | | | |
| | | | | | | 7 | | | | | |
| | | | | | | 8 | | | | | |
| 1884.3 | 25 | | | | | 6 | | | | | |
| | | | | | | | | | | | |
| 1883.3 | 26 | | | | | | | | | | |
| | | | | | | | | | | | |
| 1882.3 | 27 | | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW13

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW13

| PROJECT | | DISTRICT | | US Army Corps of Engineers - Omaha District | | | | SHEET 5 OF 7 SHEETS | |
|--------------|--------------|---|--|---|---------------------------------|-------------------|----------------|---------------------|--|
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| 1882.3 | 27 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | | | | | | |
| 1881.3 | 28 | | | | | | | | |
| 1880.3 | 29 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 7
28.5-30.5 ft.
100% Rec. | | 9 | | | |
| | | | | | | 10 | | | |
| | | | | | | 9 | | | |
| 1879.3 | 30 | | | | | 8 | | | |
| 1878.3 | 31 | | | | | | | | |
| 1877.3 | 32 | | | | | | | | |
| 1876.3 | 33 | | | | | | | | |
| 1875.3 | 34 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 8
33.5-35.5 ft.
100% Rec. | | 7 | | | |
| | | | | | | 8 | | | |
| | | | | | | 8 | | | |
| 1874.3 | 35 | | | | | 9 | | | |
| 1873.3 | 36 | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW13

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW13

| PROJECT | | DISTRICT | | SHEET | | | OF | | SHEETS | |
|-------------------------------|--------------|---|--|--|---------------------------------|-------------------|----------------|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 6 | | | 7 | | SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| 1873.3 | 36 | (SW) MEDIUM GRADED CLEAN SAND (85%): Poorly sorted, medium to very coarse grained, sub-angular, loose, wet, 10% well rounded coarse gravel, 5% fines. (10Y 4/1) (continued) | | | | | | | | |
| 1872.3 | 37 | | | | | | | | | |
| 1871.3 | 38 | | | | | | | | | |
| 1870.3 | 39 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 9
38.5-40.5 ft.
100% Rec. | | 9 | | | | |
| | | | | | | 10 | | | | |
| | | | | | | 7 | | | | |
| 1869.3 | 40 | | | | | 11 | | | | |
| 1868.3 | 41 | | | | | | | | | |
| 1867.3 | 42 | | | | | | | | | |
| 1866.3 | 43 | | | | | | | | | |
| 1865.3 | 44 | | HS=0.0 ppm
BZ=0.0 ppm
BK=0.0 ppm | SS 10
43.5-45.5 ft.
100% Rec. | | 17 | | | | |
| | | | | | | 14 | | | | |
| 1864.3 | 45 | (MH) ELASTIC SILT (95%): Low plasticity, low toughness, low dry strength, no dilatancy, very slightly moist, fine sand (5 %). (5GY 5/1) | | | | 10 | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW13

HTRW DRILLING LOG

INSPECTOR

S. Cameron

HOLE NUMBER

21B-DS-LGIA-MW13

| PROJECT | | DISTRICT | | SHEET | | | OF | | SHEETS | |
|-------------------------------|--------------|---|-----------------------------------|--|---------------------------------|-------------------|----------------|--|--------|--|
| CHAAP, Grand Island, Nebraska | | US Army Corps of Engineers - Omaha District | | 7 | | | 7 | | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
RESULTS
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | | | |
| 1864.3 | 45 | (MH) ELASTIC SILT (95%): Low plasticity, low toughness, low dry strength, no dilatancy, very slightly moist, fine sand (5 %). (5GY 5/1)
(continued) | | | | 13 | | | | |
| 1863.3 | 46 | Bottom of Borehole @ 45.5 ft
100 Gallons of Water Lost During Drilling
Heaving Sands12.3-44.5 ft
Monitoring Well Materials:
250 Lbs Filter Pack
100 Lbs Bentonite
50 Lbs Portland Grout | | | | | | | | |
| 1862.3 | 47 | | | | | | | | | |
| 1861.3 | 48 | | | | | | | | | |
| 1860.3 | 49 | | | | | | | | | |
| 1859.3 | 50 | | | | | | | | | |
| 1858.3 | 51 | | | | | | | | | |
| 1857.3 | 52 | | | | | | | | | |
| 1856.3 | 53 | | | | | | | | | |
| 1855.3 | 54 | | | | | | | | | |

PROJECT CHAAP Grand Island, Nebraska

HOLE NO 21B-DS-LGIA-MW13

21C-DPT Boring Logs

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HTRW DRILLING LOG

DISTRICT

U.S. Army Corps of Engineers - Omaha District

HOLE NUMBER

21C-LGIA-DPT02

1. COMPANY NAME

HydroGeoLogic, Inc.

2. DRILLING CONTRACTOR

GSI Engineering

SHEET

SHEETS

1 OF 4

3. PROJECT

Corn Husker Army Ammunition Plant - Tract 21C

4. LOCATION

Tract 21C, CHAAP

5. NAME OF DRILLER

Matthew Wold

6. MANUFACTURER'S DESIGNATION OF DRILL

CME 45

7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT

- 4.25" HSA

- 48" split spoons

8. HOLE LOCATION

DPT02

9. SURFACE ELEVATION

N/A

10. DATE STARTED

3-15-18

11. DATE COMPLETED

3-15-18

12. OVERBURDEN THICKNESS

N/A

15. DEPTH GROUNDWATER ENCOUNTERED

13' bgs

13. DEPTH DRILLED INTO ROCK

N/A

16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED

N/A

14. TOTAL DEPTH OF HOLE

45'

17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

N/A

18. GEOTECHNICAL SAMPLES

N/A

DISTURBED

—

UNDISTURBED

—

19. TOTAL NUMBER OF CORE BOXES

N/A

20. SAMPLES FOR CHEMICAL ANALYSIS

N/A

VOC

—

METALS

—

Explosives

—

PAHs

—

CrVI

—

21. TOTAL CORE

N/A %

22. DISPOSITION OF HOLE

Soil boring

BACKFILLED

X

MONITORING WELL

—

OTHER (SPECIFY)

—

23. SIGNATURE OF INSPECTOR

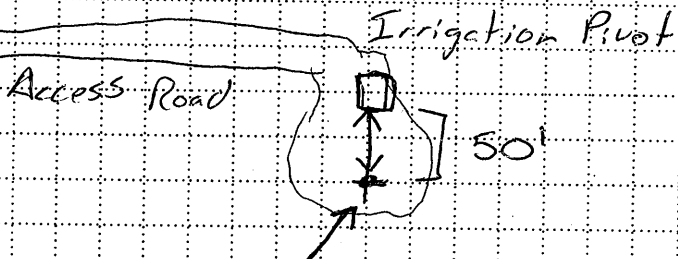
Matthew Wold

LOCATION SKETCH/COMMENTS

SCALE:

Not to scale

N



LGIA-DPT02

PROJECT

CHAAP - RI

HOLE NO

21C-LGIA-DPT02

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | HOLE NUMBER
ZIC-LGIA-DPT02 | | |
|--|--|--|------------------------|-------------------------------|---------------------|--|
| PROJECT
Corn Husker Army Ammunition Plant - Tract 21C | | INSPECTOR
Kevin Wierunge | | SHEET 2 OF 4 | | |
| Date/Time
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | USCS GROUP SYMBOL
(e) | RECOVERY (%)
(f) | REMARKS
(h) |
| 3-15-78
1540 | 1 | (0-0.5') Topsoil | | | | Slurking @ 3.5' by 3' collect 2' split spoon sample every 5' |
| | 2 | (0.5-3') Blind drill | | | N/A | |
| | 3 | | | | | |
| | 4 | (3-13') Lean Clay (CL) 90% fines 10% olive gray (54 5/2) med plastic, med stiff to stiff, dry with Fe staining, trace fine gravel | 0.0 | CL | 100% | |
| | 5 | (5-8') Blind drill | 0.0 | | | |
| | 6 | | | | N/A | |
| | 7 | | | | | |
| | 8 | (8-10') Same as above, soft, No gravel, | 0.0 | CL | 75% | |
| | 9 | | 0.0 | | | |
| | 10 | (10-13') Blind drill | 0.0 | | | |
| | | x x x | | | N/A | |
| | 15 | (13-15') well graded sand (SW) 95% fine to coarse sand, 5% fine, grayish brown (2.54 5/2) loose, wet, trace fine gravel (5-20mm), coarse sand subangular to sub rounded gravel hard, No odor | 0.0 | SW | 50% | Wet @ 13' |
| | (15-18') Blind drill | 0.0 | | N/A | | |
| | (18-20') Poorly Graded Sand (SP) 95% fine sand, 5% fines dark grayish, brown (2.54 4/2), wet, loose, trace coarse grains No odor | 0.0 | SP | 25% | | |
| 20 | | | 0.0 | | | |

PROJECT Corn Husker Army Ammunition Plant - Tract

HOLE NO
ZIC-LGIA-DPT02

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | HOLE NUMBER | | |
|---|--------------|---|------------------------|--------------------------|---------------------|----------------|
| PROJECT | | | | INSPECTOR | | |
| Corn Husker Army Ammunition Plant - Tract 21C | | | | Kevin Wierwago | | |
| HOLE NO. 21C-LGIA-DPT02 | | | | SHEET 3 OF 4 | | |
| Date/Time
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | USCS GROUP SYMBOL
(e) | RECOVERY (%)
(f) | REMARKS
(h) |
| 3-15-18 | 21 | (20-23) Blind drill | | | N/A | |
| 1625 | 25 | (23-25) Well graded sand (SW)
95% fine to coarse sand,
5% fines, loose, wet, trace
fine gravel (<20mm sub angular
to sub rounded, light tan gray (54/2) | 0.0 | SW | 75%
SW | |
| | 25 | (25-28) Blind drill | | | N/A | |
| | 30 | (28-30) Same as above (SW) | 0.0 | SW | 50% | |
| | 30 | (30-33) Blind drill | 0.0 | | N/A | |
| 1655 | 35 | (33-35) Same as above (SW) becoming
more coarse grained, few fine
gravel (15-20mm) sub angular
hard, wet | 0.0 | SW | 60%
SW | |
| | 35 | (35-38) Blind drill | 0.0 | | N/A | |
| | 40 | (38-40) Same SW as above | 0.0 | SW | 75% | |

PROJECT Corn Husker Army Ammunition Plant - Tract 21C

HOLE NO. 21C-LGIA-DPT02

| HTRW DRILLING LOG | | | | | (CONTINUATION SHEET) | | HOLE NUMBER
21C-26IA-DPT02 | |
|--|--------------|--|-----------------------------|-----------------------------|----------------------|-------------------|-------------------------------|--|
| PROJECT
Corn Husker Army Ammunition Plant - Tract 21C | | | INSPECTOR
Kevin Wierenga | | | SHEET
41 OF 41 | | |
| Date/Time
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD
SCREENING
(d) | USCS
GROUP SYMBOL
(e) | RECOVERY (%)
(f) | REMARKS
(h) | | |
| 3-15-78 | 41 | (40-43) Blind drill | | | N/A | | | |
| | | (43-45) Lean clay (CL) 95% fines, 5% fine sand, dark greenish gray (GLAY 56Y/1), stiff med plastic, dry, homogeneous | 0.0 | CL | 100% | | | |
| 1745 | 45 | EOB @ 45' | 0.0 | | N/A | | | |
| | 50 | | | | | | | |

| | | | |
|---------|---|---------|----------------|
| PROJECT | Corn Husker Army Ammunition Plant - Tract 21C | HOLE NO | 21C-26IA-DPT02 |
|---------|---|---------|----------------|

| HTRW DRILLING LOG | | | | DISTRICT
<i>LSACE - Omaha</i> | | HOLE NUMBER <i>ZIC</i>
<i>LGSA-DP502</i> | |
|--|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSI Engineering</i> | | SHEET <i>1</i> OF <i>8</i> | |
| 3. PROJECT
<i>CHAAP - Sect ZIC</i> | | | | 4. LOCATION
<i>ZIC, CHAAP, NE</i> | | | |
| 5. NAME OF DRILLER
<i>Matthew Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>CME 45</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>4.25" HSA</i>
<i>2' Split Spoon</i> | | | | 8. HOLE LOCATION
<i>DP502</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>3-15-18</i> | | 11. DATE COMPLETED
<i>3-15-18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>~13' bgs</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>45' bgs</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES
<i>NA</i> | | DISTURBED
<i>—</i> | | UNDISTURBED
<i>—</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>NA</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>NA</i> | | VOC
<i>—</i> | | METALS
<i>—</i> | | OTHER (SPECIFY)
<i>—</i> | |
| | | | | | | 21. TOTAL CORE
<i>NA</i> % | |
| 22. DISPOSITION OF HOLE
<i>Soil boring</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL
<i>—</i> | | 23. SIGNATURE OF INSPECTOR
<i>A. H. H. H. H.</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| SCALE: <i>Not to Scale</i> | | | | | | | |
| | | | | | | | |
| PROJECT
<i>CHAAP - Sect ZIC</i> | | | | | | HOLE NO
<i>ZIC-LGSA-DP502</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER ZIC |
|--|--------------|-------------------------------------|--|--|---------------------------------|----------------------------|--|
| PROJECT
CHAAP - Sect ZIC | | | INSPECTOR
R. Wierenga / A. Lodgepole | | | SHEET 2 OF 8 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS/
(h) <i>recovery</i> |
| 1340
3.15.18 | | Top Soil | | | | | 4.25" HSA w/
Collect 2' split spoon
Sample every 5' |
| | | Blind Drill | | | | | |
| | 1 | | | | | | |
| | 2 | | | | | | |
| | 3 | Lean clay (CL), 90% | 0.0 | NA | NA | NA | CL 100% |
| | | Fines, 10% Sand, m. plastic, | | | | | |
| | | m. stiff to stiff, dry, | | | | | |
| | | Fe stains, Tr. f. gravel | | | | | |
| | 4 | Olive gray (5y 5/2) | | | | | |
| | 5 | Blind Drill | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |

PROJECT **CHAAP - Sect ZI**

HOLE NO **ZIC-LGSA-DP502**

21C-DPT Boring Logs

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|--|----------------------------------|--|---------------------------------|-------------------|---------------------------|
| PROJECT | | | | INSPECTOR | | | LGSA-DPT02 |
| CHAAP - Sect ZIC | | | | R. Wierenga / A. Lodgepole | | | SHEET 3 OF 8 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
P.S.D.
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS / recovery
(h) |
| | | Blind Drill | | | | | |
| | 8 | Same as above, stiff,
no gravel | 0.0 | NA | NA | NA | CL 75% |
| | 9 | | | | | | |
| | 10 | Blind Drill | | | | | |
| | 11 | | | | | | |
| | 12 | | | | | | |
| | 13 | Well graded Sand (SW)
95% F. to coarse Sand, w/
5% fines, grayish brown
(2.5y str), loose, wet, tr. | 0.0 | NA | NA | NA | Wet @ 13'
SW 50% |
| | 14 | F. gravel (5-20mm), coarse
Sand, sub angular, sub rounded
no odor | | | | | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER ZIC |
|--|--------------|---|--------------------------------------|--|---------------------------------|----------------------------|---------------------------------|
| PROJECT
CHAAP - Sect ZIC | | | | INSPECTOR
R. Wierenga / A. Lodgepatz | | SHEET 4 OF 8 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS/
(h) recovery |
| | | See previous page | | | | | |
| | 15 | Blind Drill | | | | | |
| | 16 | | | | | | |
| | 17 | | | | | | |
| | 18 | Poorly graded Sand (SP),
95% F. Sand, 5% Fines,
Dark grayish brown (2.5y 4/2) | 0.0 | NA | NA | NA | SP 25% |
| | 19 | Wet, loose, Tr. coarse
gravel, no soder | | | | | |
| | 20 | Blind Drill | | | | | |
| | 21 | | | | | | |

| | |
|------------------------------------|----------------------------------|
| PROJECT
CHAAP - Sect ZIC | HOLE NO
ZIC-LGSA-DPT02 |
|------------------------------------|----------------------------------|

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|----------------------------|--|---------------------------------|-------------------|----------------|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP - Sect ZIC | | | R. Wierenga / A. Lodgepole | | | 5 OF 8 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | Blind Drill | P.D. | | | | |
| 22 | | | | | | | |
| 23 | | Well graded Sand (SW)
95% F. to coarse Sand,
5% Fines, loose, med. T,
gravel, sub angular,
sub rounded, olive gray
(5 y 6/2) | G.O. | NA | NA | NA | SW 75% |
| 24 | | | | | | | |
| 25 | | Blind Drill | | | | | |
| 26 | | | | | | | |
| 27 | | | | | | | |
| 28 | | Same (SW) as above | O.O. | NA | NA | NA | SW 50% |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER ZIC |
|--|--------------|---|--------------------------------------|--|---------------------------------|-----------------------------------|---------------------------------|
| PROJECT
CHAAP - Sect ZIC | | | | INSPECTOR
K. Wierenga / A. Lodgepath | | SHEET 6 OF 8 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS/
(h) recovery |
| | | See previous page | | | | | |
| | 29 | | | | | | |
| | 30 | Blind Drill | | | | | |
| | 31 | | | | | | |
| | 32 | | | | | | |
| | 33 | Same as above (SW), becoming more coarse grained, few f. gravel, (15-20mm), sub angular. | 0.0 | NA | NA | NA | SW 60% |
| | 34 | sub rounded, hard, wet | | | | | |
| | 35 | Blind Drill | | | | | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | HOLE NUMBER ZIC | |
|--|--------------|---------------------------------|--|--|---------------------------------|---|--------------------------------|
| PROJECT
CHAAP - Sect ZIC | | | INSPECTOR
K. Wiczenze / A. Lodgegate | | | LGSA-DP502
SHEET 7 OF 8 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) recovery |
| | | Blind Drill | | | | | |
| | 36 | | | | | | |
| | 37 | | | | | | |
| | 38 | Same SW as above | 0.0 | NA | NA | NA | SW 75% |
| | 39 | | | | | | |
| | 40 | Blind Drill | | | | | |
| | 41 | | | | | | |
| | 42 | | | | | | |

PROJECT **CHAAP - Sect ZIC**

HOLE NO **ZIC-LGSA-DP502**

(CONTINUATION SHEET)

LG5A-DP502

PROJECT

INSPECTOR

SHEET

SHEETS

CHAP - Sweet ZIC

K. Wierense / A. Hedgpeth

8 OF 8

| | |
|-----------------|----------------|
| PROJECT | HOLE NO |
| CHAAP - Sect 21 | 21C-165A-AP502 |

| HTRW DRILLING LOG | | | | DISTRICT
<i>LSACE - Omaha</i> | | HOLE NUMBER <i>ZIC</i>
<i>LGSA-DPT14</i> | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSS Engineering</i> | | SHEET
1 OF 8 | |
| 3. PROJECT
<i>CHAAP - Tract ZIC</i> | | | | 4. LOCATION
<i>Tract ZIC, CHAAP, NE</i> | | | |
| 5. NAME OF DRILLER
<i>Matthew Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>CME 45</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>4.25" HSA</i>
<i>2' Split Spears</i> | | | | 8. HOLE LOCATION
<i>DPT 14</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>3-16-18</i> | | 11. DATE COMPLETED
<i>3-16-18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>~9' bgs</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>~6' bgs 1 hr</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>45' bgs</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES
<i>NA</i> | | DISTURBED
<i>-</i> | | UNDISTURBED
<i>-</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>NA</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>NA</i> | | VOC
<i>-</i> | | METALS
<i>-</i> | | OTHER (SPECIFY)
<i>-</i> | |
| | | | | | | 21. TOTAL CORE
<i>NA</i> % | |
| 22. DISPOSITION OF HOLE
<i>Sail boring</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL
<i>-</i> | | OTHER (SPECIFY)
<i>-</i> | |
| | | | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepeth</i> | | | |
| LOCATION SKETCH/COMMENTS | | | | SCALE: <i>not to scale</i> | | | |
| | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>ZIC-LGSA-DPT14</i> | |

21C-DPT Boring Logs

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|------------------------|--|---------------------------------|-------------------|--|
| PROJECT | | | INSPECTOR | SHEET | | SHEETS | |
| CHAAP Sect 21C | | | Kwienyo / A. Hechepak | 2 | | OF 8 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1415
316.18 | | Top Soil | PSD | | | | 4.25" HSA w/
2' split at 3'
bgs & every 5' |
| | | Blind Drill | | | | | |
| | 1 | | | | | | |
| | 2 | | | | | | |
| | 3 | Lean Clay (LL), 90%
Silty Clay w/ 10% Fine
Sand, soft to med. stiff,
med. plastic, Fe stain,
dry, olive gray (Sy 5/2) | 0.0 | NA | NA | 2
2
3 | CL 100% |
| | 4 | | | | | | |
| | 5 | Blind Drill | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |

PROJECT
CHAAP Sect 21C

HOLE NO
21C-LGSA-DPSA

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER ZIC |
|--|--------------|---|--|--|---------------------------------|---|--------------------------------|
| PROJECT
CHAAP - Sect ZIC | | | INSPECTOR
K. Wieringa / A. Hodgepatz | | | HOLE NUMBER ZIC
LGSA-DPS14 | |
| PROJECT | | | INSPECTOR | | | SHEET 3 OF 8 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) <i>recovery</i> |
| | | Blind Drill | | | | | |
| | 8 | Same as above | 0.0 | NA | NA | 3
3
3 | CL 80% |
| | 9 | Silty Sand (SM), 75% F. Sand, 25% Fines, loose, wet, nonhomogeneous, No odor or stains, Dark Olive (Sy Gls) | | | | | Quite 9' SM |
| | 10 | Blind Drill | | | | | |
| | 11 | | | | | | |
| | 12 | | | | | | |
| | 13 | Partly graded Sand (SP), 95% F. to med. Sand, 5% Fines, loose, wet. No odor or stains, greyish brown (10 yr S/z), Sub angular sub rounded | 0.0 | NA | NA | 4
6
5 | SP 60% |
| | 14 | | | | | | |

PROJECT **CHAAP - Sect ZIC**

HOLE NO **ZIC-LGSA-DPS14**

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER <u>ZIC</u> | |
|--|--------------|---------------------------------|--|--|---------------------------------|-----------------------------------|------------------------|-----|
| PROJECT
<u>CHAAP - Tract ZIC</u> | | | INSPECTOR
<u>Kwame / A. Hedgepeth</u> | | | SHEET <u>4</u> OF <u>8</u> SHEETS | | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| | | See previous page | | | | | | |
| | 15 | Blind Drill | | | | | | |
| | 16 | | | | | | | |
| | 17 | | | | | | | |
| | 18 | Same as above | O.O | NA | NA | 4
5
8 | SP | 506 |
| | 19 | | | | | | | |
| | 20 | Blind Drill | | | | | | |
| | 21 | | | | | | | |

| | |
|-------------------------------------|----------------------------------|
| PROJECT
<u>CHAAP - Tract ZIC</u> | HOLE NO
<u>ZIC-LGSA-DPT14</u> |
|-------------------------------------|----------------------------------|

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER <i>ZIC</i> |
|--|--------------|---|--|--|---------------------------------|-----------------------|----------------------------------|
| PROJECT
<i>CHAAP Sect ZIC</i> | | | INSPECTOR
<i>K. Wierzygo / A. Hodgepote</i> | | | SHEET
<i>5</i> | SHEETS
<i>8</i> |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
<i>PSO</i>
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) <i>/ recovery</i> |
| | | <i>Blind Drill</i> | | | | | |
| | <i>22</i> | | | | | | |
| | <i>23</i> | <i>Well graded Sand (SW),
90% F. to Coarse Sand,
5% F. gravel, 5% Fines,
loose, wet, Sub angular,
Sub rounded (5-15mm),
light gray (Z.Sy 7/1)</i> | <i>0.0</i> | <i>NA</i> | <i>NA</i> | <i>6
6
10</i> | <i>SW 50%</i> |
| | <i>24</i> | | | | | | |
| | <i>25</i> | <i>Blind Drill</i> | | | | | |
| | <i>26</i> | | | | | | |
| | <i>27</i> | | | | | | |
| | <i>28</i> | <i>Blind Drill see next page
AH</i> | | | | | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER <i>ZIC</i> |
|--|--------------|---------------------------------|--|---|---------------------------------|-----------------------------------|--------------------------------|
| PROJECT
<i>CHAAP - Street ZIC</i> | | | INSPECTOR
<i>K. Wieringa / A. H. H. H. H.</i> | | | SHEET <i>6</i> OF <i>8</i> | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEO TECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) <i>recovery</i> |
| | | <i>Same SW as above</i> | <i>0.0</i> | <i>NA</i> | <i>NA</i> | <i>3</i>
<i>6</i>
<i>8</i> | <i>SW 75%</i> |
| | <i>29</i> | | | | | | |
| | <i>30</i> | <i>Blind Drill</i> | | | | | |
| | <i>31</i> | | | | | | |
| | <i>32</i> | | | | | | |
| | <i>33</i> | <i>Same SW as above</i> | <i>0.0</i> | <i>NA</i> | <i>NA</i> | <i>3</i>
<i>7</i>
<i>15</i> | <i>SW 50%</i> |
| | <i>34</i> | | | | | | |
| | <i>35</i> | <i>Blind Drill</i> | | | | | |

| | |
|--------------------------------------|------------------------------------|
| PROJECT
<i>CHAAP - Street ZIC</i> | HOLE NO
<i>ZIC - LG2A-DP514</i> |
|--------------------------------------|------------------------------------|

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER ZIC |
|--|--------------|---|--|--|---------------------------------|-----------------------------------|----------------------------------|
| PROJECT CHAAP - Tract ZIC | | | INSPECTOR K. Wiering / A. Hodgepate | | | SHEET 7 OF 8 SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
P10
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) / recovery |
| | | Blind Drill | | | | | |
| | 36 | | | | | | |
| | 37 | | | | | | |
| | 38 | Same SW as above
w gray (5y 5/1) | 0.0 | NA | NA | 6
10
14 | SW 75% |
| | 39 | | | | | | |
| | 40 | Blind Drill | | | | | |
| | 41 | | | | | | |
| | 42 | | | | | | |

| | |
|----------------------------------|-------------------------------|
| PROJECT CHAAP - Tract ZIC | HOLE NO ZIC-LGSA-DP514 |
|----------------------------------|-------------------------------|

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER <u>ZIC</u> | |
|--|--------------|---|------------------------|--|---------------------------------|----------------------------------|-------------------------------|--|
| PROJECT <u>CHAAP - Tract ZIC</u> | | | | INSPECTOR <u>KWierzyja / A Hedgepeth</u> | | | SHEET <u>8</u> OF <u>8</u> | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| | | <u>Blind Drill</u> | <u>PSD</u> | | | | | |
| | <u>A3</u> | <u>Lean Clay (CL), 95%
Fines, 5% F. Sand, m.
Stiff, m. plastic, dry,
homogeneous, greenish
gray (GLEY 56Y 9%)</u> | <u>0.0</u> | <u>NA</u> | <u>NA</u> | <u>3</u>
<u>4</u>
<u>7</u> | <u>CL 80%</u> | |
| <u>1545</u>
<u>3.16.18</u> | <u>A5</u> | <u>End of boring at 45' bgs TD</u> | | | | | | |
| | <u>46</u> | | | | | | | |
| | | <u>3.16.18</u> | | | | | | |
| PROJECT <u>CHAAP Tract ZIC</u> | | | | | | | HOLE NO <u>ZIC-LGSA-DP514</u> | |

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>ZIC-LG5A-DPT18</i> | |
|---|--|---|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSE Engineering</i> | | SHEET 1 OF 8 | |
| 3. PROJECT
<i>CHAAP - Tract ZIC</i> | | | | 4. LOCATION
<i>Tract ZIC, CHAAP, NE</i> | | | |
| 5. NAME OF DRILLER
<i>Matthew Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>CME</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT | | <i>4.25" HSA</i>
<i>4'x2" Split Spoon</i> | | 8. HOLE LOCATION
<i>DPT 18</i> | | 9. SURFACE ELEVATION
<i>NA</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | 10. DATE STARTED
<i>3-16-18</i> | | 11. DATE COMPLETED
<i>3-16-18</i> | |
| 15. DEPTH GROUNDWATER ENCOUNTERED
<i>~9' bgs</i> | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>45' TD</i> | | 18. GEOTECHNICAL SAMPLES
<i>NA</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>NA</i> | | 20. SAMPLES FOR CHEMICAL ANALYSIS | |
| | | DISTURBED
<i>-</i> | | UNDISTURBED
<i>-</i> | | 21. TOTAL CORE
<i>NA</i> % | |
| 22. DISPOSITION OF HOLE
<i>Soil boring</i> | | BACKFILLED
<i>X</i> | | MONITORING WELL | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepath</i> | |
| LOCATION SKETCH/COMMENTS | | | | SCALE: <i>Not to Scale</i> | | | |
| | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | HOLE NO
<i>ZIC-LG5A-DPT18</i> | | | |

21C-DPT Boring Logs

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER <u>ZIC-165A-DPT18</u> |
|--|--------------|--|--|--|---------------------------------|----------------------------|-----------------------------------|
| PROJECT <u>CHAAP - Trest ZIC</u> | | | INSPECTOR <u>K. Wierenga / A. Hedegepatz</u> | | | SHEET <u>2</u> OF <u>8</u> | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS / recovery
(h) |
| 1100
3-16-18 | | Topsoil | | | | | 4.25" HSA
w/ 2' SS |
| | | Blind drill | | | | | starting @ 3'
every 5' |
| | 1 | | | | | | |
| | 2 | | | | | | |
| | 3 | Lean Clay (CL), 90% Fines
10% Fine sand, med. plastic,
med. stiff, dry, Fe stain,
olive gray (5 yr 4/2) | O.D | NA | NA | 3
4
4 | CL 75% |
| | 4 | | | | | | |
| | 5 | Blind drill | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |

PROJECT CHAAP - Trest ZIC

HOLE NO
ZIC-165A-DPT18

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER <u>ZIC-LGSA-DP518</u> |
|--|--------------|--|---|--|---------------------------------|----------------------------|-----------------------------------|
| PROJECT <u>CHAAP - Tract ZIC</u> | | | INSPECTOR <u>K. Wierengo / A. Hodgepatz</u> | | | SHEET <u>3</u> OF <u>8</u> | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS / Recovery
(h) |
| | | Blind Drill | | | | | |
| | 8 | Same as above, becoming soft, moist, high plastic | 0.0 | NA | NA | 2
2
2 | CL 80% |
| | 9 | | | | | | SLT was encountered at ~9' |
| | 10 | Blind Drill | | | | | |
| | 11 | | | | | | |
| | 12 | | | | | | |
| | 13 | Well graded sands w Fines (SW), wet, non. Plastic, 95% sand, 5% Fines, Grayish Brown (10yr 5/2), loose | 0.0 | NA | NA | 2
3
5 | SW 20% |
| | 14 | | | | | | |

PROJECT CHAAP Tract ZIC

HOLE NO ZIC-LGSA-DP518

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER <i>ZIC</i> |
|--|--------------|--|--|--|---------------------------------|----------------------------------|----------------------------------|
| PROJECT
<i>CHAAP - Sect ZIC</i> | | | INSPECTOR
<i>K. Wieringo / A. Hodgepatz</i> | | | SHEET <i>4</i> OF <i>8</i> | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS / <i>recoring</i>
(h) |
| | | <i>See previous page</i> | | | | | |
| | <i>15</i> | <i>Blind Drill</i> | | | | | |
| | <i>16</i> | | | | | | |
| | <i>17</i> | | | | | | |
| | <i>18</i> | <i>Well graded Sand w Tr Fines, Fine to Coarse, light tan to grey (5y 6/1), sub angular, sub rounded</i> | <i>0.0</i> | <i>NA</i> | <i>NA</i> | <i>3</i>
<i>5</i>
<i>9</i> | <i>SW 20%</i> |
| | <i>19</i> | <i>95% sand, 5% Fines, Wet</i> | | | | | |
| | <i>20</i> | <i>Blind Drill</i> | | | | | |
| | <i>21</i> | | | | | | |

PROJECT *CHAAP - Sect ZIC*

HOLE NO
ZIC-LGSA-DPT18

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER ZIC |
|--|--------------|--|---|--|---------------------------------|----------------------------|--------------------------------|
| PROJECT
CHAAP - Sect ZIC | | | INSPECTOR
R. Wierenga / A. Hedgpeth | | | SHEET 5 OF 8 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PSD
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) Recovery |
| | | Blind Drill | | | | | |
| | 22 | | | | | | |
| | 23 | Same as above w/ sharp
Contact to 6" med.
Density, Silty Clay (ML)
med. plasticity, cohesive, | 0.0 | NA | NA | 44
3
15
23 | SM 40% |
| | 24 | V. dark grey (Z. Sy 3/1),
then to sand, non cohesive,
(SM) wet, 90% Sand, 10% fines
Sub angular, Sub rounded
grey (Sy 6/1) | | | | | |
| | 25 | Blind Drill | | | | | |
| | 26 | | | | | | |
| | 27 | | | | | | |
| | 28 | See next page | | | | | |

PROJECT **CHAAP - Sect ZIC**

HOLE NO **ZIC-LGSA-AP518**

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER <u>ZIC</u> | |
|--|--------------|--|--------------------------------------|--|---------------------------------|-------------------|-----------------------------|-----|
| PROJECT <u>CHAAP - Tract ZIC</u> | | | | INSPECTOR <u>K. Wierwille / A. Hodgepatz</u> | | | SHEET <u>6</u> OF <u>8</u> | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
<u>PSD</u>
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) <u>Heavy</u> | |
| | 29 | Same sand as above,
w/ sharp contact to med.
to coarse sand w/ fine
gravel, 95% sand, 5%
gravel, non cohesive
olive gray (Sy 5/2) | 0.0 | NA | NA | 3
5
8 | SL | 40% |
| | 30 | Blind Drill | | | | | | |
| | 31 | | | | | | | |
| | 32 | | | | | | | |
| | 33 | Well graded sand w/
fine gravel, non cohesive
wet, 95% sand, 5% F. gravel
gray (Sy 5/1) | 0.0 | NA | NA | 7
7
7 | SL | 30% |
| | 34 | | | | | | | |
| | 35 | Blind Drill | | | | | | |

PROJECT CHAAP - Tract ZIC

HOLE NO ZIC-LGSA-DP518

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER **21C**
LGSA-DPS18
 SHEET **7** OF **8** SHEETS

PROJECT **CHAAP - Tract 21C**

INSPECTOR **K. Wierenga / A. Hedgepeth**

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS /
(h) |
|--------------|--------------|---------------------------------|------------------------|--|---------------------------------|-------------------|------------------|
| | | Blind Drill | PID | | | | recovery |
| | 36 | | | | | | |
| | 37 | | | | | | |
| | 38 | No Recovery in Spans | NA | NA | NA | 14
20
22 | 0% |
| | 39 | | | | | | |
| | 40 | Blind Drill | | | | | |
| | 41 | | | | | | |
| | 42 | | | | | | |

PROJECT **CHAAP - Tract 21C**

HOLE NO **21C-LGSA-DPS18**

(CONTINUATION SHEET)

LGIA-1518

CHAAP - Sect 21C

K. Wierense / A. Hodgebach

8 OF 8

8 OF 8

| | |
|--------------------|----------------|
| PROJECT | HOLE NO |
| CHAAP - Street ZIC | ZIC-LGSA-KP518 |

(Proponent: CECW-EG)

21C-Monitoring Well Boring Logs

| HTRW DRILLING LOG | | | | DISTRICT <u>USACE Omaha</u> | | HOLE NUMBER <u>ZIC-UGSA-mw01</u> | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<u>HydroGeoLogic, Inc.</u> | | | | 2. DRILLING CONTRACTOR
<u>GSI Engineering</u> | | SHEET <u>1</u> OF <u>4</u> | |
| 3. PROJECT
<u>CHAAP RIFS</u> | | | | 4. LOCATION
<u>Grand Island, NE CHAAP</u> | | | |
| 5. NAME OF DRILLER | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<u>AT CME 55</u> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<u>4.25" HSA</u>
<u>2' x 2" Split spoon</u> | | | | 8. HOLE LOCATION
<u>ZIC-UGSA-mw01</u> | | | |
| | | | | 9. SURFACE ELEVATION
<u>NA</u> | | | |
| | | | | 10. DATE STARTED
<u>4.5.18</u> | | 11. DATE COMPLETED
<u>4.5.18</u> | |
| 12. OVERBURDEN THICKNESS
<u>NA</u> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<u>~11' bgs</u> | | | |
| 13. DEPTH DRILLED INTO ROCK
<u>NA</u> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<u>NA</u> | | | |
| 14. TOTAL DEPTH OF HOLE
<u>21.2' TD</u> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<u>NA</u> | | | |
| 18. GEOTECHNICAL SAMPLES
<u>NA</u> | | DISTURBED
<u>NA</u> | | UNDISTURBED
<u>NA</u> | | 19. TOTAL NUMBER OF CORE BOXES
<u>NA</u> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY) | |
| <u>—</u> | | <u>—</u> | | <u>—</u> | | <u>—</u> | |
| 22. DISPOSITION OF HOLE
<u>Soil boring / MW</u> | | BACKFILLED
<u>—</u> | | MONITORING WELL
<u>X</u> | | OTHER (SPECIFY)
<u>—</u> | |
| 23. SIGNATURE OF INSPECTOR
<u>A. Haldgepote</u> | | | | | | 21. TOTAL CORE
<u>NA</u> % | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| SCALE: <u>not to scale</u> | | | | | | | |
| | | | | | | | |
| PROJECT <u>CHAAP RIFS</u> | | | | | | HOLE NO <u>ZIC-UGSA-mw01</u> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|------------------------|--|---------------------------------|-------------------------|---|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIFS | | | A. Hedgecock | | | ZIC-UGSA-MW01
2 OF 4 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 4.5.18
1000 | | Topsoil | PSD | | recovery | | 4.25" HSA w/
2' SP every 3'
was completed
at neighboring
well
ZIC-LGSA-MW01
to see lithology.
Well was blind
drilled, log copied
from
ZIC-LGSA-MW02 |
| | 1 | Blind Drill | | NA | NA | NA | |
| | 2 | | | | | | |
| | 3 | | | | | | |
| | 4 | Lean clay w/ F. Sand
(95% Fines, 5% F. Sand)
Fe stain, moist, stiff, L.
Plastic, gray (7.5% S _u) | 0.0 | CL | 80% | 3
5
7 | |
| | 5 | | | | | | |
| | 6 | Blind Drill | | NA | NA | NA | |
| | 7 | | | | | | |
| PROJECT | | | | | | HOLE NO | |
| CHAAP RIFS | | | | | | ZIC-UGSA-MW01 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|--|------------------------|---------------------------------------|------------------------------|-------------------|----------------|
| PROJECT | | | INSPECTOR | | | | SHEET |
| CHAAP RIFS | | | R. Hedgepeth | | | | 3 OF 4 |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE OR CORE BOX NO.
(e) | ANALYTICAL SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | Blind Drill | | NA | NA | NA | |
| | 8 | | | | | | |
| | 9 | Same as above, Brown (7y-5/2), becoming moist, m. stiff, m. plastic to H. Plastic | 0.0 | CL | 100% | 2
2
2 | |
| | 10 | | | | | | |
| | 11 | Same as above, becoming wet | 0.0 | CL | 100% | 2
3
4 | ~11' bgs WL |
| | 12 | | | | | | |
| | 13 | Same as above, soft | 0.0 | SW | 75% | 4
7
9 | |
| | 14 | Sharp transition to well graded sand w/ fines 95% Sand, 5% Fines, Grayish brown (10y-5/2) loose, wet, sub angular, sub rounded | | | | | |

| | | | |
|---------|------------|---------|---------------|
| PROJECT | CHAAP RIFS | HOLE NO | 21C-UGIA-MW01 |
|---------|------------|---------|---------------|

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|------------------------|---|---------------------------------|-------------------------|----------------|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIFS | | | A. Hedgcock | | | 21C-UGSA-MW01
9 OF 9 | |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEO TECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | Recovery | | |
| | | Blind Drill | | NA | NA | NA | |
| | 15 | | | | | | |
| | 16 | | | | | | |
| | 17 | | | | | | |
| | 18 | | | | | | |
| | 19 | in G Sand (SL) w Fr.
Fines, F. to M. Sand, Dark
gray (7.5yr A/I), sub
angular, sub rounded,
wet, 95% Sand, 5% Fines,
loose | O.D | SL | 40% | 6
7
9 | |
| | 20 | | | | | | |
| | 21 | Blind Drill | | NA | NA | NA | |
| 1020
4.5.18 | | End of boring at - 21.2' TD - Well Screen from | | | | 11' - 21' | 10/4.5.18 |
| PROJECT | | | HOLE NO | | | | |
| CHAAP RIFS | | | 21C-UGSA-MW01 | | | | |

| HTRW DRILLING LOG | | | | DISTRICT <u>USACE Omaha</u> | | HOLE NUMBER <u>ZIC-463A-MW02</u> | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<u>HydroGeoLogic, Inc.</u> | | | | 2. DRILLING CONTRACTOR
<u>GSI Engineering</u> | | SHEET <u>1</u> OF <u>8</u> | |
| 3. PROJECT
<u>CHAAP RIFS</u> | | | | 4. LOCATION
<u>Grand Island, NE CHAAP</u> | | | |
| 5. NAME OF DRILLER | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<u>AT CMG-SS</u> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<u>4.25" HSA</u>
<u>2' X 2" Split Spoon</u> | | | | 8. HOLE LOCATION
<u>ZIC-LG3A-MW02</u> | | | |
| | | | | 9. SURFACE ELEVATION
<u>NA</u> | | | |
| | | | | 10. DATE STARTED
<u>9.4.18</u> | | 11. DATE COMPLETED
<u>9.4.18</u> | |
| 12. OVERBURDEN THICKNESS
<u>NA</u> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<u>~11' bgs</u> | | | |
| 13. DEPTH DRILLED INTO ROCK
<u>NA</u> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<u>NA</u> | | | |
| 14. TOTAL DEPTH OF HOLE
<u>45' TD</u> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<u>NA</u> | | | |
| 18. GEOTECHNICAL SAMPLES
<u>NA</u> | | DISTURBED
<u>NA</u> | | UNDISTURBED
<u>NA</u> | | 19. TOTAL NUMBER OF CORE BOXES
<u>NA</u> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY) | |
| | | | | | | | |
| 22. DISPOSITION OF HOLE
<u>Sail boring / MW</u> | | BACKFILLED | | MONITORING WELL | | OTHER (SPECIFY) | |
| | | | | | | | |
| 23. SIGNATURE OF INSPECTOR
<u>A. Hedgepeth</u> | | | | | | 21. TOTAL CORE
<u>NA</u> % | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| SCALE: <u>not to Scale</u> | | | | | | | |
| | | | | | | | |
| PROJECT <u>CHAAP RIFS</u> | | | | | | HOLE NO
<u>ZIC-LG3A-MW02</u> | |

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER
21C-LG5A-mw02

PROJECT
CHAAP RIFS

INSPECTOR
A. Hedgepoh

SHEET 2 OF 8 SHEETS

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
P20
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|----------------|--------------|---|-------------------------------|--|---------------------------------|-------------------|------------------|
| 1455
4.4.18 | | Topsoil | 0.0 | | recovery | | 4.25" HSA w/ |
| | | Blind Drill | | NA | NA | NA | 2' SP every 5' |
| | 1 | | | | | | Starting at 3.5' |
| | 2 | | | | | | |
| | 3 | | | | | | |
| | 4 | Lean Clay w/ F. Sand
(95% Fines, 5% F. Sand)
Fe Stain, moist, stiff,
Low plastic, Gray
(7.5 yr S/A) | 0.0 | CL | 80% | 3
5
7 | |
| | 5 | | | | | | |
| | 6 | Blind Drill | | NA | NA | NA | |
| | 7 | | | | | | |

PROJECT
CHAAP RIFS

HOLE NO
21C-LG5A-mw02

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|--|------------------------|--|---------------------------------|--------------------------|----------------|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIFS | | | A. Hedgcock | | | 21C-LGIA-mw02
3 OF 8 | |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | Blind Drill | | NA | NA | NA | |
| | 8 | | | | | | |
| | 9 | Same as above
Brown (7.5 yr 5/2), becoming
more moist, M. stiff,
m. plastic to high plastic, | 0.0 | CL | 100% | 2
2
2 | |
| | 10 | | | | | | |
| | 11 | Same as above, becoming
wet | 0.0 | CL | 100% | 2
3
4 | WL ~ 11' bgs |
| | 12 | | | | | | |
| | 13 | Same as above, soft
Sharp transition to
well graded sand w/ fines
95% Sand, 5% Fines
Grayish brown (10 yr 5/2) | 0.0 | SW | 75% | 4
7
9 | |
| | 14 | loose, wet, sub angular,
sub rounded | | | | | |
| PROJECT CHAAP RIFS | | | | | | HOLE NO
21C-LGIA-DW02 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|------------------------|---|--------------------------------|--------------------------|----------------|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIFS | | | A. Hedapatz | | | 21C-LGSA-mw02
4 OF 8 | |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | Recovery | | |
| | | Blind Drill | | NA | NA | NA | |
| 15 | | | | | | | |
| 16 | | | | | | | |
| 17 | | | | | | | |
| 19 | | | | | | | |
| 19 | | Well graded sand (SW) 0.0
L / F. Fines, Fine to medium
Dark gray (7.5 yr 4/1)
Sub angular, sub rounded,
Wet, 95% Sand, 5% Fines,
loose | | SW | 40% | 6
7
9 | |
| 20 | | | | | | | |
| 21 | | Blind Drill | | NA | NA | NA | |
| PROJECT CHAAP RIFS | | | | | | HOLE NO
21C-LGSA-mw02 | |

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

21C-LGSA-MW02

PROJECT

CHAAP RIFS

INSPECTOR

A. Hedapata

SHEET

5

SHEETS

OF 8

| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|-------------|--------------|---|------------------------|--|---------------------------------|-------------------|----------------|
| | | Blind Drill | RED | NA | Recovery
NA | NA | |
| | 22 | | | | | | |
| | 23 | | | | | | |
| | 24 | Same as above with
Tr. Small Gravel. | 0.0 | SW | 10% | 6
6
5 | |
| | 25 | | | | | | |
| | 26 | Blind Drill | | NA | NA | NA | |
| | 27 | | | | | | |
| | 28 | | | | | | |

PROJECT

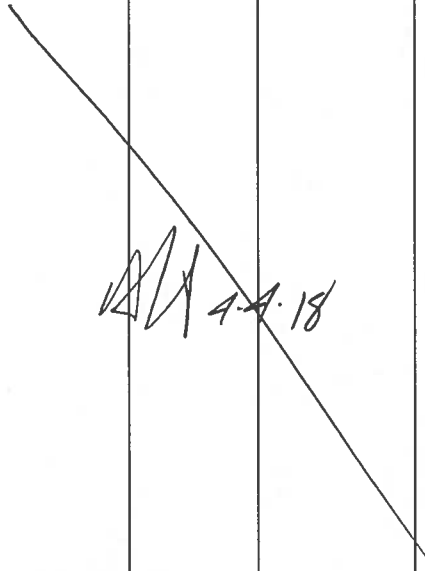
CHAAP RIFS

HOLE NO

21C-LGSA-MW02

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|------------------------|---|---------------------------------|-------------------------|----------------|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIFS | | | A. Hedapath | | | 21C-LGSA-mw02
6 OF 8 | |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | Blind Drill | | | Recovery | | |
| | | Well graded Sand (Fine to coarse) w/ Tr. Fines (95% Sand, 5% Fines), light grayish olive (10y 6/2) sub angular, sub rounded, wet, non cohesive, loose | 0.0 | NA
SW | NA
50% | NA
6
7
8 | |
| | | Blind drill | | NA | NA | NA | |
| | | Same as above w/ Tr. Small gravel < 5% | 0.0 | SW | | 8
6
6 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---------------------------------|------------------------|--|--------------------------------|-------------------------|----------------|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIFS | | | A. Hedapatz | | | 71C-LGIA-MW02
7 OF 8 | |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEO TECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous Page | | | Recovery | | |
| | | Blind Drill | | NA | NA | NA | |
| 36 | | | | | | | |
| 37 | | | | | | | |
| 38 | | | | | | | |
| | | Same as above | 0.0 | SW | 75% | 4
14
16 | |
| 39 | | | | | | | |
| 40 | | | | | | | |
| | | Blind Drill | | NA | NA | NA | |
| 41 | | | | | | | |
| 42 | | | | | | | |
| PROJECT CHAAP RIFS | | | | | | HOLE NO 71C-LGIA-MW02 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|------------------------|--|---------------------------------|--------------------------|--|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIFS | | | A. Hedgpeth | | | 21C-LS 2A-MH02
8 OF 8 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | 42 | Blind Drill | PSD | NA | Recovery
NA | NA | Driller thinks clay
is at 42', Rlt
rig hit layer |
| | 43 | Lean Clay (CL), V. stiff,
moist, m. plastic, greenish
gray (10 GY 5/1) | 0.0 | CL | CL
NA | 5
7
7 | |
| | 44 | | | | | | |
| | 45 | | | | | | |
| 1545
4.4.18 | 46 | TD of boring is 45.5' bgs, hole backfilled
to 42' - will screen to be from 32'-42' bgs | | | | | |
| | |  | | | | | |
| PROJECT | | | | | | HOLE NO | |
| CHAAP RIFS | | | | | | 21C-LS 2A-MH02 | |

| HTRW DRILLING LOG | | | | DISTRICT <u>USACE Omaha</u> | | HOLE NUMBER <u>ZIC-UGIA-mw03</u> | |
|---|--|---|--|--|-------------------------------------|---|--|
| 1. COMPANY NAME
<u>HydroGeoLogic, Inc.</u> | | 2. DRILLING CONTRACTOR
<u>GSI Engineering</u> | | | | SHEET <u>1</u> OF <u>4</u> | |
| 3. PROJECT
<u>CHAAP RIFS</u> | | | | 4. LOCATION
<u>Good Island, NE CHAAP</u> | | | |
| 5. NAME OF DRILLER
<u>Anthony M. Wold</u> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<u>AT CME SS</u> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<u>4.25" HSA</u>
<u>2' x 2" Split spoon</u> | | 8. HOLE LOCATION
<u>ZIC-UGIA-mw03</u> | | | | | |
| | | 9. SURFACE ELEVATION
<u>NA</u> | | | | | |
| | | 10. DATE STARTED
<u>4.8.18</u> | | | 11. DATE COMPLETED
<u>4.8.18</u> | | |
| 12. OVERBURDEN THICKNESS
<u>NA</u> | | 15. DEPTH GROUNDWATER ENCOUNTERED
<u>~12.5' BGS</u> | | | | | |
| 13. DEPTH DRILLED INTO ROCK
<u>NA</u> | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<u>NA</u> | | | | | |
| 14. TOTAL DEPTH OF HOLE
<u>20.7' BGS</u> | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<u>NA</u> | | | | | |
| 18. GEOTECHNICAL SAMPLES
<u>NA</u> | | DISTURBED
<u>NA</u> | | UNDISTURBED
<u>NA</u> | | 19. TOTAL NUMBER OF CORE BOXES
<u>NA</u> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY) | |
| | | | | | | | |
| 22. DISPOSITION OF HOLE
<u>Soil boring / MW</u> | | BACKFILLED
<u>-</u> | | MONITORING WELL
<u>X</u> | | 23. SIGNATURE OF INSPECTOR
<u>A. Hedgepeth</u> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| SCALE: <u>not to scale</u> | | | | | | | |
| | | | | | | | |
| PROJECT <u>CHAAP RIFS</u> | | | | | | HOLE NO
<u>ZIC-UGIA-mw03</u> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|------------------------|---|---------------------------------|-------------------|---|
| PROJECT | | | INSPECTOR | | | SHEET | |
| CHAAP RIFS | | | A. Hedgerath | | | 2 OF 4 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 950
4.8.18 | | Topsoil | P10 | | rework | | Lith. From neighbor well ZIC-LGSA-MW04 using 4.25" HSA w/ 2' SP every 5' @ 3.5' |
| | 1 | Blind Drill | | NA | NA | NA | This well drilled with 4.25" HSA |
| | 2 | | | | | | |
| | 3 | | | | | | |
| | 4 | Lean Clay (75% CL) w/ Tr. F. Sand (5%), Stiff, M. Dense, Fe stain, Dry to moist, light olive Brown (2.5y 5/4) | 0.0 | CL | 10% | 1
2
2
3 | |
| | 5 | | | | | | |
| | 6 | Blind Drill | | NA | NA | NA | |
| | 7 | | | | | | |

| | | | |
|---------|------------|---------|---------------|
| PROJECT | CHAAP RIFS | HOLE NO | ZIC-UGSA-MW03 |
|---------|------------|---------|---------------|

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|--|------------------------|---|---------------------------------|-------------------|--|
| PROJECT | | INSPECTOR | | | | SHEET | |
| CHAAP RIFS | | A. Hedgepeth | | | | 3 OF 3 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | Blind Drill | PID | NA | NA | NA | |
| | 8 | | | | | | |
| | 9 | Lean clay (95% LL) w/ Tr. F. Sand (5%), S. to M. stiffness, moist, M. Plastic, Light olive Brown (2.5y 5/4), Fe stains | 0.0 | CL | 100% | 1
2
2 | |
| | 10 | | | | | | |
| | 11 | Same as above, becoming wet, Gray (2.5y 5/1) | 0.0 | CL | 50% | 2
4
6 | |
| | 12 | | | | | | |
| | 13 | Sharp Contact at 12.5' to well graded F. to M. Sand (90%), few organic fines (10%), wet, non cohesive, sub angular/rounded, Dark yllw Brn (10yr 3/4) less organics in depth, Sand to Coarse at 14' w/ Dark yllw Brn (10yr 4/4) | 0.0 | SW | | 4
9
11 | ~12.5' wt Transition from moist to wet |
| | 14 | | | | | | |

PROJECT

CHAAP RIFS

HOLE NO

ZIC-UG1A-mw03

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|--|------------------------|---|--------------------------------|-------------------------|----------------|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIFS | | | A. Hedgepath | | | 21C-UGSA-MW03
4 OF 4 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | recorp | | |
| | | Blind Drill | | NA | NA | NA | |
| | 15 | | | | | | |
| | 16 | | | | | | |
| | 17 | | | | | | |
| | 18 | | | | | | |
| | 19 | Well graded Sand (SW),
F. to Coarse (95%), w/
Tr. Fines (5%), loose, wet,
non cohesive, sub angular,
sub rounded, gray
(Z.S. 4 5/1) | 0.0 | SW | 20% | 6
5
6 | |
| | 20 | | | | | | |
| | | Blind Drill | | NA | NA | NA | |
| 10/10
4-8-18 | 21 | TD of Well is 20.7' BGS
10.5' - 20.5' BGS | | | | | From |
| PROJECT CHAAP RIFS | | | | | | HOLE NO 21C-UGSA-MW03 | |

| HTRW DRILLING LOG | | | | DISTRICT <u>USACE Omaha</u> | | HOLE NUMBER <u>ZIC-LGSA-MW04</u> | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<u>HydroGeoLogic, Inc.</u> | | | | 2. DRILLING CONTRACTOR
<u>GSI Engineering</u> | | SHEET <u>1</u> OF <u>8</u> SHEETS | |
| 3. PROJECT
<u>CHAAP RIFS</u> | | | | 4. LOCATION
<u>Grand Island, NE CHAAP</u> | | | |
| 5. NAME OF DRILLER
<u>S. Tinnell</u> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<u>AT CMSS</u> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<u>4.25" HSA</u>
<u>2'x2" Split Spoon</u> | | | | 8. HOLE LOCATION
<u>ZIC-LGSA-MW04</u> | | | |
| | | | | 9. SURFACE ELEVATION
<u>NA</u> | | | |
| | | | | 10. DATE STARTED
<u>4.6.18</u> | | 11. DATE COMPLETED
<u>4.6.18</u> | |
| 12. OVERBURDEN THICKNESS
<u>NA</u> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<u>~12.5' BGS</u> | | | |
| 13. DEPTH DRILLED INTO ROCK
<u>NA</u> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<u>NA</u> | | | |
| 14. TOTAL DEPTH OF HOLE
<u>~44' BGS</u> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<u>NA</u> | | | |
| 18. GEOTECHNICAL SAMPLES
<u>NA</u> | | DISTURBED
<u>NA</u> | | UNDISTURBED
<u>NA</u> | | 19. TOTAL NUMBER OF CORE BOXES
<u>NA</u> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY) | |
| | | | | | | | |
| 22. DISPOSITION OF HOLE
<u>Soil boring / MW</u> | | BACKFILLED
<u>-</u> | | MONITORING WELL
<u>X</u> | | 23. SIGNATURE OF INSPECTOR
<u>A. Hedgepeth</u> | |
| LOCATION SKETCH/COMMENTS | | | | SCALE: <u>not to scale</u> | | | |
| | | | | | | | |
| PROJECT <u>CHAAP RIFS</u> | | | | | | HOLE NO
<u>ZIC-LGSA-MW04</u> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|--|------------------------|---|--------------------------------|-------------------|---|
| PROJECT | | | INSPECTOR | | | SHEET | |
| CHAAP RIFS | | | A. Hedgepeth | | | 2 OF 8 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1330
4.6.18 | | Topsoil | PID | | recess | | Drilled using
4.25" HSA w/
2' SP every 5'
@ 3.5' |
| | 1 | Blind Drill | | NA | NA | NA | |
| | 2 | | | | | | |
| | 3 | | | | | | |
| | 4 | Lean Clay (95% CL) w/
F. F. Sand (5%), stiff,
M. Dense, Fe. Stain, Dry
to moist, light olive
Brn (2.5 y S/A) | 0.0 | CL | 10% | 1
2
2
3 | |
| | 5 | | | | | | |
| | 6 | Blind Drill | | NA | NA | NA | |
| | 7 | | | | | | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|--|------------------------|---|---------------------------------|-------------------|--|
| PROJECT | | INSPECTOR | | | | SHEET SHEETS | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | Blind Drill | | NA | NA | NA | |
| | 8 | | | | | | |
| | 9 | Lean Clay (95% CL) w/ Tr. F. Sand (5%), s. to m. stiffness, moist, M. plastic, L. olive Brn (Z.Sy S/A), Fe Stains, | 0.0 | CL | 100% | 1
2
2 | |
| | 10 | | | | | | |
| | 11 | Same as above, becoming wet, Gray (Z.Sy S/A) | 0.0 | CL | 50% | 2
4
6 | |
| | 12 | | | | | | |
| | 13 | Sharp contact at 12.5' to Well Graded F. to M. Sand (90%), Few Organic Fines (10%), wet, non cohesive, sub angular/rounded Dark yellowish Brown, (10 yr 3/6), less organics with depth & Increase Sand to Coarse at 14' w/ D.K. yllw Brn (10 yr 4/A) | 0.0 | SW | | 4
9
11 | ~12.5' w/t Transition from moist to wet. |
| | 14 | | | | | | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---------------------------------------|------------------------|---------------------------------------|------------------------------|-------------------------|----------------|
| PROJECT | | | INSPECTOR | | | SHEET OF SHEETS | |
| CHAAP RIFS | | | A. Hedgepeth | | | 21C-LGSA-mw04
4 OF 8 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE OR CORE BOX NO.
(e) | ANALYTICAL SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | recap | | |
| | | Blind Drill | | NA | NA | NA | |
| | 15 | | | | | | |
| | 16 | | | | | | |
| | 17 | | | | | | |
| | 18 | | | | | | |
| | 19 | Well graded Sand (SW) 0.0 | | SW | 20% | 6 | |
| | | F. to Coarse (95% _{AD}), w/ | | | | 5 | |
| | | Tr. Fines (5%), loose, | | | | 6 | |
| | | wet, noncohesive, | | | | | |
| | | Gray (Z.Sy 5/1), sub | | | | | |
| | | angular, sub rounded | | | | | |
| | 20 | | | | | | |
| | | Blind Drill | | NA | NA | NA | |
| | 21 | | | | | | |
| PROJECT | | | | | | HOLE NO | |
| CHAAP RIFS | | | | | | 21C-LGSA-mw04 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | HOLE NUMBER | |
|--|--------------|---------------------------------|------------------------|--|---------------------------------|-------------------|----------------|
| PROJECT | | | INSPECTOR | | | SHEET | |
| CHAAP RIFS | | | A. Hedgepath | | | 5 OF 8 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | Blind Drill | PID | NA | recuse | NA | |
| | 22 | | | | | | |
| | 23 | | | | | | |
| | 24 | Same as above | 0.0 | SL | 25% | 7
9
8 | |
| | 25 | | | | | | |
| | 26 | Blind Drill | | NA | NA | NA | |
| | 27 | | | | | | |
| | 28 | | | | | | |

| | | | |
|---------|------------|---------|---------------|
| PROJECT | CHAAP RIFS | HOLE NO | 21C-LGSA-mw04 |
|---------|------------|---------|---------------|

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

ZIC-LGSA-MW04

PROJECT

CHAAP RIFS

INSPECTOR

A. Hedgepath

SHEET

SHEETS

6 OF 8

| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|--------------|--------------|---|-------------------------------|--|---------------------------------|-------------------|----------------|
| | 29 | Blind Drill
Well graded Sand (F.
to coarse 90%) & Tr.
Small gravel (5%) + Fines (5%),
Wet, non cohesive, v.
Dark gray (Sy 31), m.
Dense | 0.0 | NA
SW | NA
50% | NA
6
5
6 | |
| | 30 | | | | | | |
| | 31 | Blind Drill | | NA | NA | NA | |
| | 32 | | | | | | |
| | 33 | | | | | | |
| | 34 | Same as above | 0.0 | SW | 90% | 7
7
6 | |
| | 35 | | | | | | |

PROJECT

CHAAP RIFS

HOLE NO

ZIC-LGSA-MW04

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|------------------------|---|---------------------------------|-------------------|----------------|
| PROJECT | | | INSPECTOR | | | SHEET | |
| CHAAP RIFS | | | A. Hedgepeth | | | ZIC - LGSA-MW04 | |
| | | | | | | 7 OF 8 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | P10 | | recap | | |
| | | Blind Drill | | NA | NA | NA | |
| | 36 | | | | | | |
| | 37 | | | | | | |
| | 38 | | | | | | |
| | 39 | Poorly graded F. Sand (SP)
(95%), w/ Tr. Fines (5%),
Non Cohesive, wet, m.
dense | 0.0 | SP | 10% | 14
34
43 | |
| | 40 | | | | | | |
| | 41 | Blind Drill | | NA | NA | NA | |
| | 42 | See next page | | | | | |
| PROJECT | | | | | | HOLE NO | |
| CHAAP RIFS | | | | | | ZIC - LGSA-MW04 | |

| HTRW DRILLING LOG | | | | DISTRICT <u>USACE Omaha</u> | | HOLE NUMBER <u>ZIC-UGIA-MW05</u> | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<u>HydroGeoLogic, Inc.</u> | | | | 2. DRILLING CONTRACTOR
<u>GSI Engineering</u> | | SHEET <u>1</u> OF <u>4</u> SHEETS | |
| 3. PROJECT
<u>CHAAP RIFS</u> | | | | 4. LOCATION
<u>Grand Island, NE CHAAP</u> | | | |
| 5. NAME OF DRILLER
<u>J. Sennell</u> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<u>AT CME 55</u> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<u>4.25" HSA</u>
<u>2'x2" Split spoon</u> | | | | 8. HOLE LOCATION
<u>ZIC-UGIA-MW05</u> | | | |
| | | | | 9. SURFACE ELEVATION
<u>NA</u> | | | |
| | | | | 10. DATE STARTED
<u>4.5.18</u> | | 11. DATE COMPLETED
<u>4.5.18</u> | |
| 12. OVERBURDEN THICKNESS
<u>NA</u> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<u>~ 12' bgs</u> | | | |
| 13. DEPTH DRILLED INTO ROCK
<u>NA</u> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<u>NA</u> | | | |
| 14. TOTAL DEPTH OF HOLE
<u>20.2' TO</u> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<u>NA</u> | | | |
| 18. GEOTECHNICAL SAMPLES
<u>NA</u> | | DISTURBED
<u>NA</u> | | UNDISTURBED
<u>NA</u> | | 19. TOTAL NUMBER OF CORE BOXES
<u>NA</u> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC | | METALS | | OTHER (SPECIFY) | |
| | | | | | | | |
| 22. DISPOSITION OF HOLE
<u>Soil boring / MW</u> | | BACKFILLED
<u>-</u> | | MONITORING WELL
<u>X</u> | | 23. SIGNATURE OF INSPECTOR
<u>A. Hedgepeth</u> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| SCALE: <u>not to scale</u> | | | | | | | |
| | | | | | | | |
| PROJECT <u>CHAAP RIFS</u> | | | | | | HOLE NO <u>ZIC-UGIA-MW05</u> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|--|------------------------|--|---------------------------------|-------------------|--|
| PROJECT | | INSPECTOR | | | SHEET | | SHEETS |
| CHAAP RIFS | | A. Hedgpark | | | 2 | | OF 4 |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1435
4.5.18 | | Top Soil | PID | | renew | | Lit. is taken |
| | | Blind Drill | | NA | NA | NA | ZIC-LGSA-mw06
boring & copied
over. Well was
blind drilled
using 4.25" HSA |
| | 1 | | | | | | - Lit. boring used |
| | 2 | | | | | | 4.25" HSA w/ 2' SP |
| | 3 | | | | | | every 5' @ 3.5' |
| | 4 | Lean Clay w. F. Sand (CL)
95% Fines, 5% F. Sand,
Dry, Fe Stain, M. plastic,
Stiff, grayish Brown
(10 yr 5/2) | 0.0 | CL | 30% | 2
2
3 | |
| | 5 | | | | | | |
| | 6 | Blind Drill | | NA | NA | NA | |
| | 7 | | | | | | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|-------------------------------|---|---------------------------------|-------------------|----------------|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIFS | | | A. Hedgepeth | | | 3 OF 4 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | Blind Drill | 1 | NA | recap | NA | |
| | 8 | | | | | | |
| | 9 | Lean Clay (CL), w/ Tr.
F. Sand, Same as above,
becoming moist, Tr. Fe
stain, mottling, stiff,
AH | 0.0 | CL | 100% | 2
3
3 | |
| | 10 | m. plastic, Grayish Brn
(10 yr 5/2) | | | | | |
| | 11 | Same as above | 0.0 | CL | 100% | 3
3
4
1 | |
| | 12 | Sharp Transition to Poorly
graded Sand, F. to medium,
Tr. Fines, wet, non cohesive,
D. yellowish Brn (10 yr 3/6) | 0.0 | SP | | | |
| | 13 | Well graded Sand w/
Tr. Fines, F. to coarse,
Non cohesive, wet,
m. Dense, D. yellowish
Brn (10 yr 3/6) | 0.0 | SW | 60% | 7
9
13 | |
| | 14 | | | | | | |
| PROJECT | | | | | | HOLE NO | |
| CHAAP RIFS | | | | | | 21-UGIA-MW05 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|--|------------------------|--|---------------------------------|-----------------------------|----------------|
| PROJECT | | INSPECTOR | | | | SHEET SHEETS | |
| CHAAP RIFS | | A. Hedgepath | | | | 21C - UG 2A-MW05
4 OF 4 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | rework | | |
| | | Blind Drill | | NA | NA | NA | |
| | 15 | | | | | | |
| | 16 | | | | | | |
| | 17 | | | | | | |
| | 18 | | | | | | |
| | 19 | Same as above w/ Tr.
Small gravel & Tr. fines
color change to Br
(7.5 YR 5/2), noncohesive,
m. Dense | 0.0 | SW | 30% | 6
6
9 | |
| 1455
4.5.18 | 20 | | | | | | |
| | 21 | TD of boring at 20.2' BGS, Well Screen from
10'-20' bgs based on Lit. from 21C-UG 2A-MW06 | | | | | |
| | | | | | | | |
| PROJECT | | CHAAP RIFS | | | | HOLE NO
21C - UG 2A-MW05 | |

| HTRW DRILLING LOG | | | | DISTRICT <i>USACE Omaha</i> | | HOLE NUMBER <i>ZIC-LGIA-MW06</i> | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSI Engineering</i> | | SHEET <i>1</i> OF <i>8</i> SHEETS | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Grand Island, NE CHAAP</i> | | | |
| 5. NAME OF DRILLER
<i>J. Tinnell</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>AT CME 55</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>4.25" HSA</i>
<i>2'x2" Splitspoon</i> | | | | 8. HOLE LOCATION
<i>ZIC-LGIA-MW06</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>4.5.18</i> | | 11. DATE COMPLETED
<i>4.5.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>~12' bgs</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>45.5' BGS</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES
<i>NA</i> | | DISTURBED
<i>NA</i> | | UNDISTURBED
<i>NA</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>NA</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC
<i>-</i> | | METALS
<i>-</i> | | OTHER (SPECIFY)
<i>-</i> | |
| | | | | | | 21. TOTAL CORE
<i>NA</i> % | |
| 22. DISPOSITION OF HOLE
<i>Soil boring / MW</i> | | BACKFILLED
<i>-</i> | | MONITORING WELL
<i>X</i> | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepeth</i> | |
| <div style="display: flex; justify-content: space-between;"> LOCATION SKETCH/COMMENTS SCALE: <i>not to scale</i> </div> <div style="height: 300px; border: 1px dotted black; position: relative; margin-top: 10px;"> <div style="position: absolute; top: 10%; left: 10%;"> </div> <div style="position: absolute; top: 40%; left: 30%;"> <p><i>ZIC-LGIA-MW09</i></p> <p style="text-align: center;">- 400'</p> <p><i>ZIC-LGIA-MW06</i></p> </div> <div style="position: absolute; top: 60%; left: 20%;"> <p><i>ZIC-LGIA-MW04</i></p> <p style="text-align: center;">- 350'</p> </div> </div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>ZIC-LGIA-MW06</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|--|------------------------|--|---------------------------------|-------------------------|----------------|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIFS | | | A. Hedapala | | | 21C-LGSA-MW06
2 OF 8 | |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1140
4.5.18 | | Top Soil | RED | | Recovery | | 4.25" HSA w/ |
| | | Blind Drill | | NA | NA | NA | 2' SP every |
| | 1 | | | | | | 5' starting at |
| | 2 | | | | | | 3.5' bgs |
| | 3 | | | | | | |
| | 4 | Lean Clay w/ F. Sand (CL)
95% Fines, 5% F. Sand,
Dry, Fe stain, M. plastic,
Stiff, Grayish Brown (10yr 5/2) | 0.0 | CL | 30% | 2
2
3 | |
| | 5 | | | | | | |
| | 6 | Blind Drill | | NA | NA | NA | |
| | 7 | | | | | | |

| | | | |
|---------|------------|---------|---------------|
| PROJECT | CHAAP RIFS | HOLE NO | 21C-LGSA-MW06 |
|---------|------------|---------|---------------|

| HTRW DRILLING LOG | | | | | | (CONTINUATION SHEET) | | HOLE NUMBER | |
|-------------------|--------------|---|------------------------|---|--------------------------------|----------------------|----------------|-------------|--|
| PROJECT | | | | INSPECTOR | | | SHEET | | |
| CHAAP RIFS | | | | A. Hedapata | | | 210-465A-MW06 | | |
| PROJECT | | | | INSPECTOR | | | SHEET | | |
| CHAAP RIFS | | | | A. Hedapata | | | 3 OF 8 | | |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO
(f) | BLOW COUNT
(g) | REMARKS
(h) | | |
| | | Blind Drill | | NA | NA | NA | | | |
| | 8 | | | | | | | | |
| | 9 | Lean Clay (CL) w Tr.
F. Sand, same as above
becoming moist, Tr. Fe
mottling, stiff, m. plastic
Grayish Brown (10yr 5/2) | 0.0 | CL | 100% | 2
3
3 | | | |
| | 10 | | | | | | | | |
| | 11 | Same as above | 0.0 | CL | 100% | 3
3
4
1 | | | |
| | 12 | Sharp transition to poorly
graded Sand, Fine to Med.
Tr. Fines, wet, noncohesive
D. yellowish brown (10yr 3/6) | 0.0 | SP | | | WT -12' | | |
| | 13 | well graded Sand w/
Tr. Fines, Fine to Coarse,
non cohesive, wet, M. Dense
D. yellowish Brn (10yr 3/6) | 0.0 | SW | 60% | 7
9
13 | | | |
| | 14 | | | | | | | | |
| PROJECT | | | | | | HOLE NO | | | |
| CHAAP RIFS | | | | | | 210-465A-MW06 | | | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|------------------------|--|---------------------------------|-------------------|----------------|
| PROJECT | | | INSPECTOR | | | SHEET | |
| CHAAP RIFS | | | A. Hedapata | | | 4 OF 8 | |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | Recovery | | |
| | | Blind Drill | | NA | NA | NA | |
| 15 | | | | | | | |
| 16 | | | | | | | |
| 17 | | | | | | | |
| 18 | | | | | | | |
| 19 | | Same as above w Fr.
Small Gravel & Fines
Color change to Brown
(7.5 YR 5/2), non cohesive,
M. Dense | 0.0 | SW | 30% | 6
6
9 | |
| 20 | | | | | | | |
| 21 | | Blind Drill | | NA | NA | NA | |

| | | | |
|---------|------------|---------|---------------|
| PROJECT | CHAAP RIFS | HOLE NO | 21C-LGIA-mw06 |
|---------|------------|---------|---------------|

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
ZIC-LGSA-MW06 | |
|--|--------------|---------------------------------|------------------------|--|---------------------------------|-------------------|------------------------------|--|
| PROJECT
CHAAP RIFS | | | | INSPECTOR
A. Hedapata | | | SHEET 5 OF 8 SHEETS | |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| | | Blind Drill | | NA | Recovery
NA | NA | | |
| 22 | | | | | | | | |
| | | Blind Drill | | NA | NA | NA | AH 4.5.14 | |
| 23 | | | | | | | | |
| | | Same as above | 0.0 | SW | 80% | 10
16
22 | | |
| 24 | | | | | | | | |
| 25 | | | | | | | | |
| | | Blind Drill | | NA | NA | NA | | |
| 26 | | | | | | | | |
| 27 | | | | | | | | |
| 28 | | | | | | | | |

PROJECT CHAAP RIFS

HOLE NO
ZIC-LGSA-MW06

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---------------------------------|------------------------|---|---------------------------------|-------------------|----------------|
| PROJECT | | | | INSPECTOR | | | SHEET |
| CHAAP RIFS | | | | A. Hedgcock | | | 6 OF 8 |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEO TECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | Blind Drill | | NA | NA | NA | |
| | | Same as above | 0.0 | SW | 30% | 8 | |
| | | grayish olive (10 y 1 1/2) | | | | 11 | |
| | | | | | | 12 | |
| | | Blind Drill | | NA | NA | NA | |
| | | | | | | | |
| | | Same as above, will grade | 0.0 | SW | 50% | 5 | |
| | | Sand, w/ Tr Small gravel | | | | 11 | |
| | | + Tr. Fines (90% F. to | | | | 16 | |
| | | Coarse, 5% Small gravel, 5% | | | | | |
| | | Fines), non cohesive, wet, | | | | | |
| | | m. dense, grayish olive | | | | | |
| | | (10 y 1 1/2) | | | | | |

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

ZIC-LGJA-mw06

PROJECT

CHAAP RIFS

INSPECTOR

A. Hedapath

SHEET

SHEETS

7 OF 8

| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|-------------|--------------|---|------------------------|---|---------------------------------|-------------------|----------------|
| | | See previous page | | | Recovery | | |
| | | Blind Drill | | NA | NA | NA | |
| | 36 | | | | | | |
| | 37 | | | | | | |
| | 38 | | | | | | |
| | 39 | (SL) well graded sand w/ 0.0
Tr. Gravel (5%) Tr. Fines
(5%), Fine to Coarse, non-
cohesive, loose, wet, non-
plastic, grayish olive
(10 y 5/2) | | SLW | 40% | 5
6
12 | |
| | 40 | | | | | | |
| | 41 | Blind Drill | | NA | NA | NA | |
| | 42 | | | | | | |

PROJECT

CHAAP RIFS

HOLE NO

ZIC-LGJA-mw06

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|------------------------|---|--------------------------------|--------------------------|----------------|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIFS | | | A. Hedgcock | | | ZIC-LGIA-mw06
8 OF 8 | |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | Blind Drill | | NA | NA | NA | |
| 43 | | Same as above | 0.0 | SW | 50% | 5
9
13 | |
| 44 | | Sharp Transition to
Lean Clay (CL) w/ Tr.
F. Sand, stiff, moist, L.
Plastic, Dark greenish
grey (GLAY 1 4 10y) | 0.0 | CL | | | |
| 1315
4.5.18 | | TD of boring is 45.5' BGS - Well Screen will be set
at 44.5 - 34.5', Approx. 100 gal H ₂ O used
to Equalize pressure | | | | | |
| 46 | | | | | | | |
| 47 | | | | | | | |
| PROJECT CHAAP RIFS | | | | | | HOLE NO
ZIC-LGIA-mw06 | |

| HTRW DRILLING LOG | | | | DISTRICT <i>USACE Omaha</i> | | HOLE NUMBER <i>ZIC-UGIA-MW07</i> | |
|---|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSI Engineering</i> | | SHEET <i>1</i> OF <i>5</i> | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Grand Island, NE CHAAP</i> | | | |
| 5. NAME OF DRILLER
<i>J. Tinnell</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>AT CME-55</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT
<i>4.25" HSA</i>
<i>2'x2" Split Spoon</i> | | | | 8. HOLE LOCATION
<i>ZIC-UGIA-MW07</i> | | | |
| | | | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>4.4.18</i> | | 11. DATE COMPLETED
<i>4.4.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>~11.5' bgs</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>21.7' BGS</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES
<i>NA</i> | | DISTURBED
<i>NA</i> | | UNDISTURBED
<i>NA</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>NA</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS | | VOC
<i>—</i> | | METALS
<i>—</i> | | OTHER (SPECIFY)
<i>—</i> | |
| | | | | | | 21. TOTAL CORE
<i>NA</i> % | |
| 22. DISPOSITION OF HOLE
<i>Seal boring/MW</i> | | BACKFILLED
<i>—</i> | | MONITORING WELL
<i>X</i> | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepeth</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | SCALE: <i>Not to Scale</i> | |
| | | | | | | | |
| PROJECT <i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>ZIC-UGIA-MW07</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
ZIC-UGIA-mw07 |
|--|--------------|--|-------------------------------|--|---------------------------------|-------------------|--|
| PROJECT
CHAAP RIFS | | | | INSPECTOR
A. Hedgepath | | | SHEET
2 OF 5 |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
DID
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 4.4-18
1200 | | Top Soil | 0.0 | | Recovery | | Copies from boring on ZIC-LGIA-mw08. Well was Blind drilled based off lithology from mw08. mw08 was 425" HSA w/ 2' SP every 5' |
| | 1 | Blind Drill | | NA | NA | | |
| | 2 | | | | | | |
| | 3 | | | | | | |
| | 4 | Lean Clay (CL) w/ Tr. F. Sand, Tr Fe Stain, stiff, moist, L. to M. plastic, Grayish brown (10yr 5/2) | 0.0 | CL | 30% | 233 | |
| | 5 | | | | | | |
| | 6 | Blind Drill | | NA | NA | | |
| | 7 | | | | | | |

| | |
|-----------------------|--------------------------|
| PROJECT
CHAAP RIFS | HOLE NO
ZIC-UGIA-mw07 |
|-----------------------|--------------------------|

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER
21C-UG5A-mw07 |
|--|--------------|--|--------------------------|---|--------------------------------|----------------------|------------------------------|
| PROJECT
CHAAP RIFS | | | INSPECTOR
A. Hedgcock | | | SHEET
3 OF 5 | |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | Blind Drill | | NA | Recovery
NA | | |
| | 8 | | | | | | |
| | 9 | Same as above, from
S. to M. stiffness | 0.0 | CL | 100% | 1
1
1 | |
| | 10 | | | | | | |
| | 11 | Same as above w/ Increasing
Fe stain, moist to wet,
Grayish Brown (10yr 5/2),
m. plastic, S. to M.
stiffness | 0.0 | CL | 90% | 2
3
4 1/2
3 | |
| | 12 | | | | | | |
| | 13 | Same as above, wet,
Sharp transition to | 0.0 | CL | 70% | 6
5
14
16 | |
| | 14 | Poorly Graded Sand (SP)
95% F. Sand to M., 5% Fines,
non cohesive, subrounded,
sub angular, wet | | SP | | | |

PROJECT CHAAP RIFS

HOLE NO
21C-UG5A-mw07

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|------------------------|---|---------------------------------|--------------------------|----------------|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIFS | | | A. Hedgepatz | | | ZIC-UGSA-MW07
4 OF 5 | |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEO TECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | Recovery | | |
| | | Blind Drill | | NA | NA | | |
| | 15 | | | | | | |
| | 16 | | | | | | |
| | 17 | | | | | | |
| | 18 | | | | | | |
| | 19 | Poorly Graded Sand (SP)
w/ Tr. Fines, 95% F. Sand,
5% Fines, non cohesive,
Sub angular, Sub rounded,
Tr. M. Sand, M. dense,
wet, non plastic | 0.0 | SP | 50% | 8
8
7 | |
| | 20 | | | | | | |
| | 21 | Blind Drill | | NA | NA | | |
| PROJECT CHAAP RIFS | | | | | | HOLE NO
ZIC-UGSA-MW07 | |

| HTRW DRILLING LOG | | | | DISTRICT <u>USACE Omaha</u> | | HOLE NUMBER <u>ZIC-LGIA-MW08</u> | |
|--|--|---|--|---|--|--|--|
| 1 COMPANY NAME
<u>HydroGeoLogic, Inc.</u> | | | | 2 DRILLING CONTRACTOR
<u>GSI Engineering</u> | | SHEET <u>1</u> OF <u>8</u> SHEETS | |
| 3 PROJECT
<u>CHAAP RIFS</u> | | | | 4 LOCATION
<u>Grand Island, NE CHAAP</u> | | | |
| 5 NAME OF DRILLER
<u>J. Tinnell</u> | | | | 6 MANUFACTURER'S DESIGNATION OF DRILL
<u>AT CME 55</u> | | | |
| 7 SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT | | <u>4.25" HSA</u>
<u>2'x2" Splitspoon</u> | | 8 HOLE LOCATION
<u>ZIC-LGIA-MW08</u> | | 9 SURFACE ELEVATION
<u>NA</u> | |
| 12 OVERBURDEN THICKNESS
<u>NA</u> | | | | 10 DATE STARTED
<u>4.4.18</u> | | 11 DATE COMPLETED
<u>4.4.18</u> | |
| 13 DEPTH DRILLED INTO ROCK
<u>NA</u> | | | | 15 DEPTH GROUNDWATER ENCOUNTERED
<u>~11.5' bgs</u> | | 16 DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<u>NA</u> | |
| 14 TOTAL DEPTH OF HOLE
<u>45.5' TD</u> | | | | 17 OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<u>NA</u> | | | |
| 18 GEOTECHNICAL SAMPLES
<u>NA</u> | | DISTURBED
<u>NA</u> | | UNDISTURBED
<u>NA</u> | | 19 TOTAL NUMBER OF CORE BOXES
<u>NA</u> | |
| 20 SAMPLES FOR CHEMICAL ANALYSIS | | VOC
<u>—</u> | | METALS
<u>—</u> | | OTHER (SPECIFY)
<u>—</u> | |
| 22 DISPOSITION OF HOLE
<u>Soil boring / MW</u> | | BACKFILLED
<u>—</u> | | MONITORING WELL
<u>X</u> | | OTHER (SPECIFY)
<u>—</u> | |
| 21. TOTAL CORE
<u>NA</u> % | | | | 23. SIGNATURE OF INSPECTOR
<u>A. Hedgepeth</u> | | | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| SCALE: <u>not to Scale</u> | | | | | | | |
| | | | | | | | |
| PROJECT <u>CHAAP RIFS</u> | | | | | | HOLE NO
<u>ZIC-LGIA-MW08</u> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | HOLE NUMBER | |
|--|--------------|---|------------------------|--|---------------------------------|-------------------------|--|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIFS | | | A. Hedgcock | | | 21C-LG3A-MW08
2 OF 8 | |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 920
4.1.14 | | Top Soil | 0.0 | 0.0 | Recut | | 4.25" HSA w/
2"x2" SP every
5' starting
~3' |
| | 1 | Blind Drill | | NA | NA | NA | |
| | 2 | | | | | | |
| | 3 | | | | | | |
| | 4 | Lean Clay (CL) w/
Tr. F. Sand & Fe stain,
stiff, moist, L. plastic to
medium, Grayish Brown
(10 yr S/z) | 0.0 | CL | 30% | 2
3
3
3 | |
| | 5 | | | | | | |
| | 6 | Blind Drill | | | | | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO
21C-LG3A-MW08

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

ZIC-LGSA-11608

PROJECT

CHAAP RIFS

INSPECTOR

A. Hedgcock

SHEET

3

SHEETS

OF 8

| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|-------------|--------------|--|------------------------|--|---------------------------------|--------------------|----------------------|
| | | Blind Drill | | | Recovery | | |
| | 8 | | | | | | |
| | 9 | Same as above, changing
to S. to M. stiffness | 0.0 | CL | 100% | 1 | |
| | 10 | | | | | | |
| | 11 | Same as above w/
increasing Fe stain,
moist increasing to
wet, Greyish brown
(10 yr 5/2), M. plastic
S. to M. stiffness | 0.0 | CL | 90% | 2
3
2
3 | 11.5'
~ Approx Wk |
| | 12 | | | | | | |
| | 13 | Same as above, wet,
Sharp transition to | 0.0 | CL | 70% | 6
5
14
16 | |
| | 14 | Poorly Graded Sand (SP)
95% F. to M Sand, 5% fine
Dark grey (10 yr A/I), non
cohesive, sub angular, wet,
sub rounded | 0.0 | SP | | | |

PROJECT

CHAAP RIFS

HOLE NO

ZIC-LGSA-11608

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

ZIC-LGSA-MW08

PROJECT

CHAAP RIFS

INSPECTOR

A. Hedgcock

SHEET

SHEETS

4

OF 8

| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|-------------|--------------|--|------------------------|---|---------------------------------|-------------------|----------------|
| | | See previous page | DIS | | Recovery | | |
| | | Blind Drill | | NA | NA | NA | |
| | 15 | | | | | | |
| | 16 | | | | | | |
| | 17 | | | | | | |
| | 18 | | | | | | |
| | 19 | Poorly graded Sand
w/ Tr. Fines (95%
F. Sand, 5% Fines),
gray (10 yr S ₁), non cohesive
Sub angular, sub rounded
Tr. M. Sand, M. dense,
wet, non plastic | 0.0 | SP | 50% | 8
8
7 | |
| | 20 | | | | | | |
| | 21 | Blind Drill | | NA | NA | NA | |

PROJECT

CHAAP RIFS

HOLE NO

ZIC-LGSA-MW08

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

21C-LGSA-MW08

PROJECT

CHAAP RIFS

INSPECTOR

A. Hedapata

SHEET

SHEETS

5

OF 8

| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|-------------|--------------|--|------------------------|---|---------------------------------|-------------------|----------------|
| | | Blind Drill | | NA | Recovery
NA | NA | |
| | 22 | | | | | | |
| | 23 | | | | | | |
| | 24 | Well graded Sand ^{ART} SP
w. F. gravel & Fines
(90% Sand & to M, 5%
F. gravel, 5% Fines)
Dark grayish green (Sgy A ₂)
wet, non cohesive, sub
angular, sub rounded,
m. dense | 0.0 | SW | 60% | 5
8
11 | |
| | 25 | | | | | | |
| | 26 | Blind Drill | | NA | NA | NA | |
| | 27 | | | | | | |
| | 28 | | | | | | |

PROJECT

CHAAP RIFS

HOLE NO

21C-LGSA-MW08

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|--|------------------------|---|---------------------------------|------------------------------------|----------------|
| PROJECT | | | | INSPECTOR | | SHEET SHEETS | |
| CHAAP RIFS | | | | A. Hedapata | | 21C - LG-1-MW-08
6 OF 8 | |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | Recovery | | |
| | 29 | Same as above, w/ low
odor | 0.0 | SW | 40% | 4
8
9 | |
| | 30 | | | | | | |
| | 31 | Blind Drill | | NA | NA | NA | |
| | 32 | | | | | | |
| | 33 | | | | | | |
| | 34 | Well graded Sand
w/ to F. Gravel & Fines
(90% F to M sand, 5% F.
gravel, 5% fines), sub angular
Sub rounded, wet, non
cohesion, no odor,
gray (5y 5/1) | 0.0 | SW | 40% | 4.44
84.41
9
7
9
12 | |
| | 35 | | | | | | |
| PROJECT | | | | | | HOLE NO | |
| CHAAP RIFS | | | | | | 21C - LG-1-MW-08 | |

HTRW DRILLING LOG

(CONTINUATION SHEET)

HOLE NUMBER

ZIC-LGSA-mw08

PROJECT

CHAAP RIFS

INSPECTOR

A. Hedgcock

SHEET

7 OF 8 SHEETS

| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
|-------------|--------------|--|------------------------|---|---------------------------------|-------------------|----------------|
| | | See previous page | | | Recovery | | |
| | | Blind Drill | | NA | NA | NA | |
| | 36 | | | | | | |
| | 37 | | | | | | |
| | 38 | | | | | | |
| | 39 | Same as above with increasing Fines ~10%
Dark gray (Sv 4/1) clay lens, 3" Lean clay, 95% Fines, 5% F. Sand, wet, m. plastic, m. to stiff, sharp transition back to SW | 0.0 | SW
CL lens
SW | 100% | 9
13
20 | |
| | A0 | | | | | | |
| | | Blind Drill | | NA | NA | NA | |
| | A1 | | | | | | |
| | A2 | | | | | | |

PROJECT

CHAAP RIFS

HOLE NO

ZIC-LGSA-mw08

(CONTINUATION SHEET)

212- LG 5A-mw08

8 OF 8

CHAAP RIES

А. Недерат

[illegible]

CHAAP RIFS

21C-LGFA-MW08

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>ZIC-UGSA-MW09</i> | |
|--|--|------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSI Engineering</i> | | SHEET
<i>1</i> OF <i>4</i> SHEETS | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Grand Island, NE CHAAP</i> | | | |
| 5. NAME OF DRILLER
<i>M. Wold</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>AT CME SS</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT | | <i>4.25" ID HSA</i> | | 8. HOLE LOCATION
<i>ZIC-UGSA-MW09</i> | | | |
| | | <i>2' x 2" SP</i> | | 9. SURFACE ELEVATION
<i>NA</i> | | | |
| | | | | 10. DATE STARTED
<i>4.8.18</i> | | 11. DATE COMPLETED
<i>4.8.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>~13' BGS</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>21.2' TO</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES
<i>-</i> | | DISTURBED
<i>-</i> | | UNDISTURBED
<i>-</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>NA</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>-</i> | | VOC
<i>-</i> | | METALS
<i>-</i> | | OTHER (SPECIFY)
<i>-</i> | |
| | | | | | | 21. TOTAL CORE
<i>NA</i> % | |
| 22. DISPOSITION OF HOLE
<i>Sealbury/MU</i> | | BACKFILLED
<i>-</i> | | MONITORING WELL
<i>X</i> | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepeth</i> | |
| LOCATION SKETCH/COMMENTS | | | | | | | |
| <div style="text-align: right;">SCALE: <i>Not to Scale</i></div> | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>ZIC-UGSA-MW09</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|-------------------------------|---|--------------------------------|-------------------------|---|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIFS | | | D. Hedgepeth | | | ZIC-UGIA-mw09
2 OF 4 | |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1350
4.4.18 | | Top Soil | | | Recovery | | Hell Lite is from neighbor hole ZIC-LGIA-mw10. |
| | | Blind Drill | | NA | NA | NA | Hole was blind drilled using a 4.25" HSA. Lite is from 2'x2" SP |
| | 1 | | | | | | |
| | 2 | | | | | | |
| | 3 | | | | | | |
| | 4 | Lean Clay (95% Fines) w/ Tr. F. Sand (5%), (CL), | 0.0 | CL | 20% | 4 | |
| | 5 | stiff, L. to non. plastic, Fe stains, Dry to moist, Light Brownish gray (2.5/6 1/2) | | | | 5 | |
| | 6 | Blind Drill | | NA | NA | NA | |
| | 7 | | | | | | |

PROJECT CHAAP RIFS

HOLE NO ZIC-UGIA-mw09

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | HOLE NUMBER | |
|--|--------------|---|------------------------|--|---------------------------------|-------------------|---|
| PROJECT | | | INSPECTOR | | | SHEET | |
| CHAAP RIFS | | | A. Hedgpeth | | | 3 OF 4 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | Blind Drill | PSD | NA | Recovery
NA | NA | |
| | 8 | | | | | | |
| | 9 | Lean Clay (95% CL) w/
Tr. F. Sand (5%), V. Soft,
Moist, Fe stain, H. plastic,
grayish Brown (2.5y 5/2) | 0.0 | CL | 30% | 1
2
2 | |
| | 10 | | | | | | |
| | 11 | Same as above, becoming
wet, dark gray (2.5y 4/1)
M. stiff | 0.0 | CL | 100% | 3
4
8 | |
| | 12 | | | | | | |
| | 13 | Same as above | 0.0 | CL | 30% | 6
12
16 | |
| | 14 | Sharp Transition to WG
F. to Coarse Sand (95%),
Fines (5%), wet, noncohesive,
M. dense, light Olive
Brown (2.5y 5/4),
sub angular, sub rounded | 0.0 | SW | | | ~13' by 5
WT - transition
to wet

w/ Grayish Brn
(2.5y 5/2) lens |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER | |
|--|--|---------------------------------|------------------------|--|---------------------------------|-------------------|----------------|--|
| PROJECT | | | | INSPECTOR | | | SHEET | |
| CHAAP RIFS | | | | A. Hedgepeth | | | 1 OF 4 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) | |
| | | See previous page | PSD | | Recovery | | | |
| | | Blind Drill | | NA | NA | NA | | |
| | 15 | | | | | | | |
| | 16 | | | | | | | |
| | 17 | | | | | | | |
| | 18 | | | | | | | |
| | 19 | Same as above | 0.0 | SL | 30% | 8
18
18 | | |
| | 20 | | | | | | | |
| | 21 | Blind Drill | | NA | NA | NA | | |
| 1410
4.8.19 | TD of boring is 21.2' BGS - well Screened from 11'-21' bgs 1/2" / 1/4" | | | | | | | |
| PROJECT | | | | | | | HOLE NO | |
| CHAAP RIFS | | | | | | | 21C-UGIA-M409 | |

| HTRW DRILLING LOG | | | | DISTRICT
<i>USACE - Omaha</i> | | HOLE NUMBER
<i>ZIC-LGSA-mw10</i> | |
|---|--|-------------------------|--|---|--|---|--|
| 1. COMPANY NAME
<i>HydroGeoLogic, Inc.</i> | | | | 2. DRILLING CONTRACTOR
<i>GSS Engineering</i> | | SHEET 1 OF 8 | |
| 3. PROJECT
<i>CHAAP RIFS</i> | | | | 4. LOCATION
<i>Grand Island, NE CHAAP</i> | | | |
| 5. NAME OF DRILLER
<i>J. Tinnell</i> | | | | 6. MANUFACTURER'S DESIGNATION OF DRILL
<i>AT CME-SS</i> | | | |
| 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT | | <i>1.25" HSA</i> | | 8. HOLE LOCATION
<i>ZIC-LGSA-mw10</i> | | 9. SURFACE ELEVATION
<i>NA</i> | |
| | | <i>2"x2" SP Sampler</i> | | 10. DATE STARTED
<i>4.6.18</i> | | 11. DATE COMPLETED
<i>4.6.18</i> | |
| 12. OVERBURDEN THICKNESS
<i>NA</i> | | | | 15. DEPTH GROUNDWATER ENCOUNTERED
<i>~13' BGS</i> | | | |
| 13. DEPTH DRILLED INTO ROCK
<i>NA</i> | | | | 16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
<i>NA</i> | | | |
| 14. TOTAL DEPTH OF HOLE
<i>46' BGS</i> | | | | 17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
<i>NA</i> | | | |
| 18. GEOTECHNICAL SAMPLES
<i>NA</i> | | DISTURBED
<i>-</i> | | UNDISTURBED
<i>-</i> | | 19. TOTAL NUMBER OF CORE BOXES
<i>NA</i> | |
| 20. SAMPLES FOR CHEMICAL ANALYSIS
<i>NA</i> | | VOC
<i>-</i> | | METALS
<i>-</i> | | OTHER (SPECIFY)
<i>-</i> | |
| | | BACKFILLED
<i>-</i> | | MONITORING WELL
<i>X</i> | | OTHER (SPECIFY)
<i>-</i> | |
| 22. DISPOSITION OF HOLE
<i>Soil boring / ML</i> | | | | 23. SIGNATURE OF INSPECTOR
<i>A. Hedgepath</i> | | 21. TOTAL CORE
<i>NA</i> % | |
| LOCATION SKETCH/COMMENTS | | | | SCALE: <i>not to scale</i> | | | |
| | | | | | | | |
| PROJECT
<i>CHAAP RIFS</i> | | | | | | HOLE NO
<i>ZIC-LGSA-mw10</i> | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|-------------------------------|---|--------------------------------|-------------------------|---|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIFS | | | A. Hedgecock | | | 21C-LG5A-MW10
2 OF 8 | |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
PID
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| 1015
4.6.14 | | Topsoil | | | recovery | | Drilled using
4.25" HSA V/
2' SP Every 5'
@ 3' |
| | 1 | Blind Drill | | NA | NA | NA | |
| | 2 | | | | | | |
| | 3 | | | | | | |
| | 4 | Lean Clay w/ Tr. F. | 0.0 | CL | 20% | 4
5
9 | |
| | 5 | Sand (95% Fines, 5% F.Sand)
Dry, Stiff, L. plastic to non,
Fe Steins, Light Brownish
gray (2.5y 6/2), Dry
to moist. | | | | | |
| | 6 | Blind Drill | | NA | NA | NA | |
| | 7 | | | | | | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|--|------------------------|---|--------------------------------|-------------------|---------------------------------------|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIFS | | | A. Hedgepeth | | | 3 OF 8 | |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | Blind Drill | | NA | NA | NA | |
| | 8 | | | | | | |
| | 9 | Lean Clay (95%) w/ Tr.
(5%) F. Sand (CL),
V. Soft, moist, Fe stain,
High plastic, greyish
Brown (Z. Sy 5/2) | 0.0 | CL | 30% | 1
2
2 | |
| | 10 | | | | | | |
| | 11 | Same as above, becoming
wet, dark gray (Z. Sy 4/1),
M. Stiff | 0.0 | CL | 100% | 3
4
8 | |
| | 12 | | | | | | |
| | 13 | Same as Above | 0.0 | CL | 30% | 6
12
16 | |
| | 14 | Sharp transition to WG
F. to Coarse Sand (95%)
w/ Tr. Fines (5%), wet,
non cohesive, m. dense,
light olive Brn (Z. Sy 5/4) | 0.0 | SW | | | ~13' bgs
WT - transition
to wet |
| | | sub angular, sub rounded, | | | | | w/ Greyish Brown
(Z. Sy 5/2) lens |
| PROJECT | | | | | | HOLE NO | |
| CHAAP RIFS | | | | | | ZIC-LGIA-mw10 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---------------------------------|------------------------|---|---------------------------------|-------------------------|----------------|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIFS | | | J. Hedgepeth | | | 21C-LGSA-MW10
4 OF 8 | |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | PID | | Recony | | |
| | 15 | Blind Drill | | NA | NA | NA | |
| | 16 | | | | | | |
| | 17 | | | | | | |
| | 18 | | | | | | |
| | 19 | Same as above | 0.0 | SW | 30% | 8
18
18 | |
| | 20 | | | | | | |
| | 21 | Blind Drill | | NA | NA | NA | |

| | | | |
|---------|------------|---------|---------------|
| PROJECT | CHAAP RIFS | HOLE NO | 21C-LGSA-MW10 |
|---------|------------|---------|---------------|

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|--|------------------------|--|---------------------------------|-------------------------|----------------|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RZFS | | | A. Hockyok | | | 21C-LGSA-mu10
5 OF 8 | |
| ELEV
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | Blind Drill | PID | NA | Recovery
NA | NA | |
| | 22 | | | | | | |
| | 23 | | | | | | |
| | 24 | Same as above, fr.
Small gravel, grades
color to Greenish gray
GLEY 1 (S/10y) | O.C | SW | 75% | 9
2A
26 | |
| | 25 | | | | | | |
| | 26 | Blind Drill | | NA | NA | NA | |
| | 27 | | | | | | |
| | 28 | | | | | | |
| PROJECT | | | | | | HOLE NO | |
| CHAAP RZFS | | | | | | 21C-LGSA-mu10 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---------------------------------|------------------------|--|---------------------------------|-------------------------|----------------|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHADAP REFS | | | D. Hedgepeth | | | ZIC-LGSA-MW10
6 OF 8 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | P20 | | Recovery | | |
| | | F. to Coarse well graded | 0.0 | SL | 40% | 5 | |
| | 29 | Sand (95%) w/ Tr. Fines. | | | | 6 | |
| | | (5%), non cohesive, wet, | | | | 12 | |
| | | Sub angular, Sub rounded, | | | | | |
| | | M. dense, Greenish | | | | | |
| | 30 | gray (GLEY 1 S/10y) | | | | | |
| | | Blind Drill | | NA | NA | NA | |
| | 31 | | | | | | |
| | | | | | | | |
| | 32 | | | | | | |
| | | | | | | | |
| | 33 | | | | | | |
| | | Blind Drill | | NA | NA | NA | |
| | 34 | Same as above w/ | 0.0 | SL | 60% | 9 | |
| | | Few Small gravel (10%) | | | | 10 | |
| | | | | | | 10 | |
| | 35 | | | | | | |
| PROJECT CHADAP REFS | | | | | | HOLE NO ZIC-LGSA-MW10 | |

| HTRW DRILLING LOG (CONTINUATION SHEET) | | | | | | | HOLE NUMBER |
|--|--------------|---|------------------------|--|---------------------------------|-------------------|----------------|
| PROJECT | | | INSPECTOR | | | SHEET SHEETS | |
| CHAAP RIFS | | | A. Hodgepott | | | 7 OF 8 | |
| ELEV.
(a) | DEPTH
(b) | DESCRIPTION OF MATERIALS
(c) | FIELD SCREENING
(d) | GEOTECH SAMPLE
OR CORE BOX NO.
(e) | ANALYTICAL
SAMPLE NO.
(f) | BLOW COUNT
(g) | REMARKS
(h) |
| | | See previous page | | | recovery | | |
| | | Blind Drill | | NA | NA | NA | |
| | 36 | | | | | | |
| | 37 | | | | | | |
| | 38 | | | | | | |
| | 39 | Poorly graded M.
Sand 95% Tr Fines (5%)
wet, noncohesive, M.
Dense, greenish grey
(GLEYS/10), Sub
angular, Sub rounded | 0.0 | SP | 30% | 7
5
8 | |
| | 40 | | | | | | |
| | 41 | Blind Drill | | NA | NA | NA | |
| | 42 | | | | | | |
| | | See next page | | | | | |

PROJECT CHAAP RIFS

HOLE NO
ZIC-LGSA-MW10

(CONTINUATION SHEET)

210-LG5A-mh/0

SHEET 8 OF 8 SHEETS

CHAP RIFS

N. H. G. P. K.

REMARKS
(h)

Same as above w/
Fr. Small gravel (5%)

G. G.

SP

| | |
|-------|----|
| recap | 7 |
| | 12 |
| | 23 |

43.

Same as above

0.0

SP

| | |
|-----|---|
| 60% | 6 |
| | 7 |
| | 9 |

45.

Sharp Transition to
Lean Clay (95% CL),
w/ Tr. F. Sand (5%),
gray (54%), stiff,
moist, m. plastic

0.0

11

1200
4.6.18 AG

TD of Boring is 46' BGS,
be set from 35'-45' BGS

Screen of well will

~~4.6.18~~

CHAAP RIFS

21C-L65A-MW10

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APPENDIX D

FIELD SAMPLING RECORDS

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Background Area – Soil Field Sampling Records