

SUBJECT

Workplan for Removal of Water from Former East Lagoon and Stabilization of Sediments – RACER Buick City

TO

Grant Trigger, RACER

DATE

May 4, 2022

OUR REF

03300

DEPARTMENT

Environment

PROJECT NUMBER

30121887

COPIES TO

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This workplan has been prepared as an attachment to the contract with Severson Environmental Services, Inc. (Severson) to describe the tasks related to preparing the former wastewater Lagoon (lagoon) at the RACER Buick City Site (**Figure 1**) for filling with soils removed from the Highway I-69 road reconstruction project in Flint. The soils that will be brought to the Site have been analyzed and concentrations are below applicable Michigan Part 201 cleanup criteria.

The lagoon is currently filled with approximately 5.8 million gallons of water that is impacted with PFAS concentrations above Part 201 groundwater and surface water criteria. Furthermore, the sediments at the bottom of the lagoon are also impacted with PFAS above Part 201 soil criteria. Finally, due to weather conditions, the fact that the soils used to construct the lagoon are relatively impermeable, and no controlled spillway exists the water in the lagoon recently overflowed the eastern and southern side walls. Closing the lagoon in place will remove the threat of further overflows.

The activities presented in this workplan are intended as an interim response to address PFAS impacts in the lagoon and potentially groundwater downgradient (east) of the lagoon. The work will consist of three major components:

- Removing and treating the water in the lagoon, with subsequent discharge to the City of Flint sanitary sewer system.
- Consolidation of PFAS contaminated sediment from the base and sidewalls of the lagoon (Estimated about 2200 yards).
- Mixing the sediment with a treatment reagent (to be determined) for the purpose of minimizing leaching of PFAS from the impacted sediment. The stabilized sediment would be contained in the bottom of the lagoon and then covered with clean soils.

On a parallel path, RACER is working to obtain approval for this work from the Michigan Department of Environment, Great Lakes, and Energy (EGLE).

Removing and Treating Lagoon Water

The water in the lagoon must be pumped out and treated to remove PFAS as necessary for discharge to the City of Flint sanitary sewer system. There is an estimated 5.8 million gallons of water currently in the lagoon. The contractor will be responsible for determining the proper treatment of the water and obtaining permits from the City of Flint for discharge of the treated water to the sanitary sewer.

It is anticipated that as pumping continues and the water level approaches the base of the lagoon, the amount of suspended sediment in the water will increase and the contractor will need to take measures to prevent this sediment from becoming entrained in the treated water train, as it is likely to be impacted. Furthermore, based on previous hydrogeologic investigations conducted at the lagoon, groundwater is discharging to the lagoon from the west and north. As such, a sump or sumps will likely need to be installed in the base of the lagoon to help remove the water and keep the excavation workable for the next stage of work.

Removal of Sediments from the Lagoon

Once the water from the lagoon has been removed to the point where equipment is able to track, approximately 6 inches of sediment/clay will be removed from the base and sidewalls of the lagoon up to an elevation of approximately 724 amsl. Based on previous sediment thickness measurements in the lagoon, on average of less than 6" of soft sediment is present underlain by a stiff clay material. As such, the material removed from the base of the lagoon will likely be a mix of soft sediment and stiff clay. Sediment thicknesses on the sidewalls of the lagoon were not measured, thus it is unknown how much soft sediment vs. stiff clay material will be removed. Severson has estimated that 2,234 cubic yards of sediment/soil will be stripped from the base and sidewalls of the lagoon for future treatment. Severson has prepared cost estimates for removing/treating both the base and sidewall materials and the base material only (calculated by Severson as 934 cubic yards).

Consolidation and Treatment of Sediments

The material removed from the base and sidewalls of the lagoon will be placed in a designated area on the base of the lagoon. While the exact location has not yet been determined, the preferred location is on the upgradient (west) side of the lagoon just west of the "peninsula" of soil (see **Figure 2**).

As indicated previously, the treatment reagent has not been determined. Bench scale testing is currently underway to determine the preferred treatment reagent and respective concentration of that reagent.

Severson will work with the selected treatment vendor (Holcim, Aquablok) to determine the appropriate mixing method. Once the mixing is complete, the treated material needs to be surveyed laterally and horizontally to document its placement.

Schedule

RACER has developed a suggested schedule, which is presented on **Figure 3**. That schedule is subject to change, based on permitting, weather, or other field issues that might arise. It is RACER's objective to begin backfilling the lagoon with I-69 soils by June 10, 2022 or sooner.

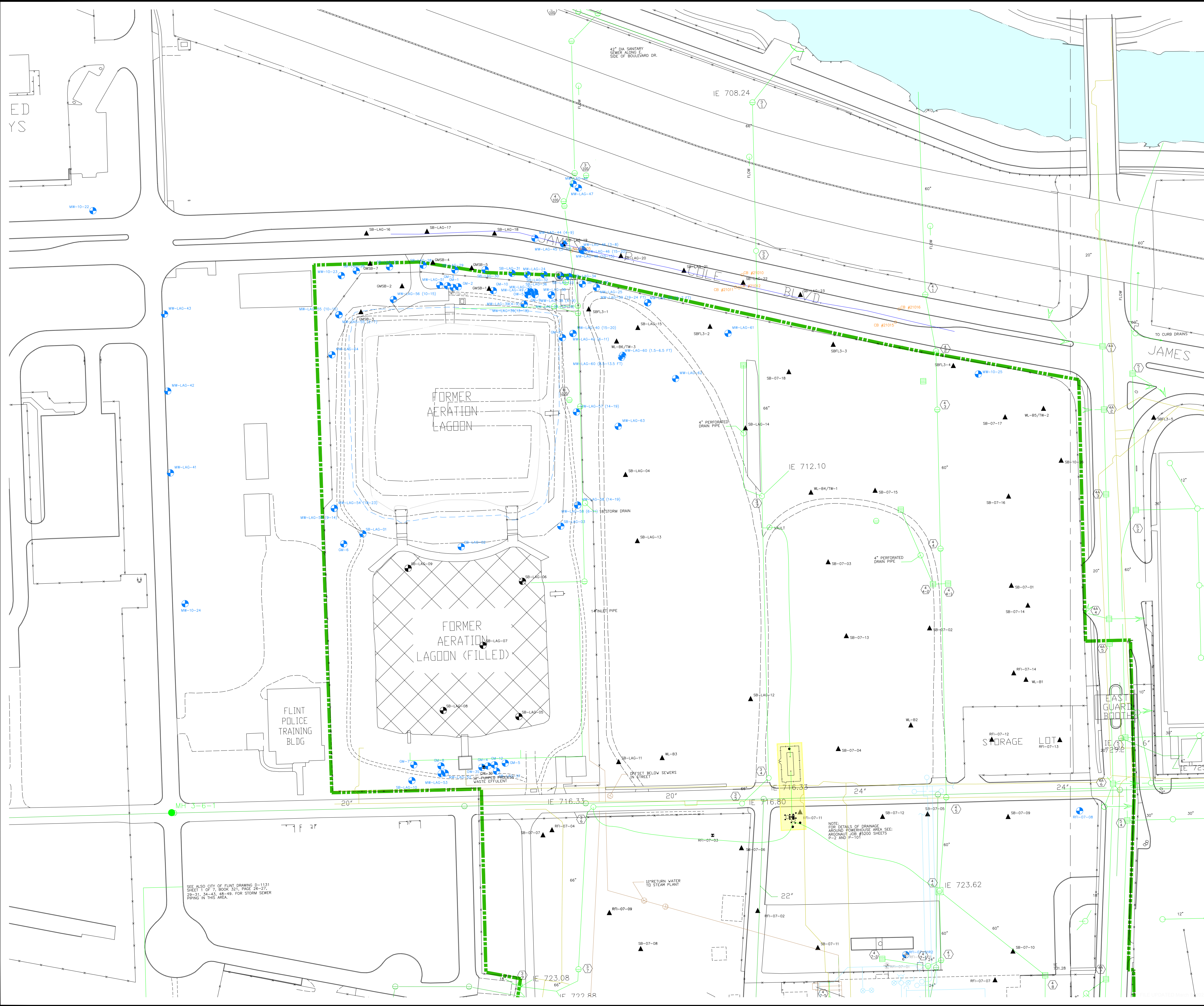
Enc. Figures

Figure 1 – Site Location Map

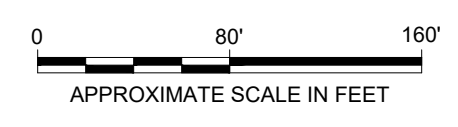
Figure 2 – Lagoon Contour Map

Figure 3 – Project Schedule

C:\Users\roblender\OneDrive - ARCADIS\BIM 360\Docs\AUS\RACER TRUST\BUICK CITY\FLINT\Michigan\2022\01\in Progress\01-DWG\2022 SITE_zoomed.dwg LAYOUT 1_SAVED 3/8/2022 1:00 PM ACADVER 23.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED 3/8/2022 1:00 PM BY: OBERLANDER, ROSEANNE



- LEGEND:**
- ▲ SOIL BORING
 - ⊕ ABANDONED MONITORING WELL
 - ⊕ MONITORING WELL (ACTIVE)
 - ⊕ PIEZOMETER
 - ⊕ RECOVERY WELL
 - ⊕ OBSERVATION WELL
 - ⊕ SOIL GAS POINT
 - ⊕ SUB-SLAB MONITORING POINT
 - ⊕ TRANSECT POINT
 - ⊕ SURFACE WATER
 - ⊕ RIVER GAUGE
 - ⊕ TEST PIT
 - ⊕ UNABLE TO LOCATE
 - COMMUNICATIONS SYSTEMS (NO INFO)
 - ELECTRICAL LINE (NO INFO)
 - FIRE WATER
 - GAS, OIL STEAM, OR PETROLEUM
 - POTABLE WATER
 - PROCESS WASTE
 - SANITARY SEWER
 - STORM SEWER
 - UNKNOWN UTILITIES



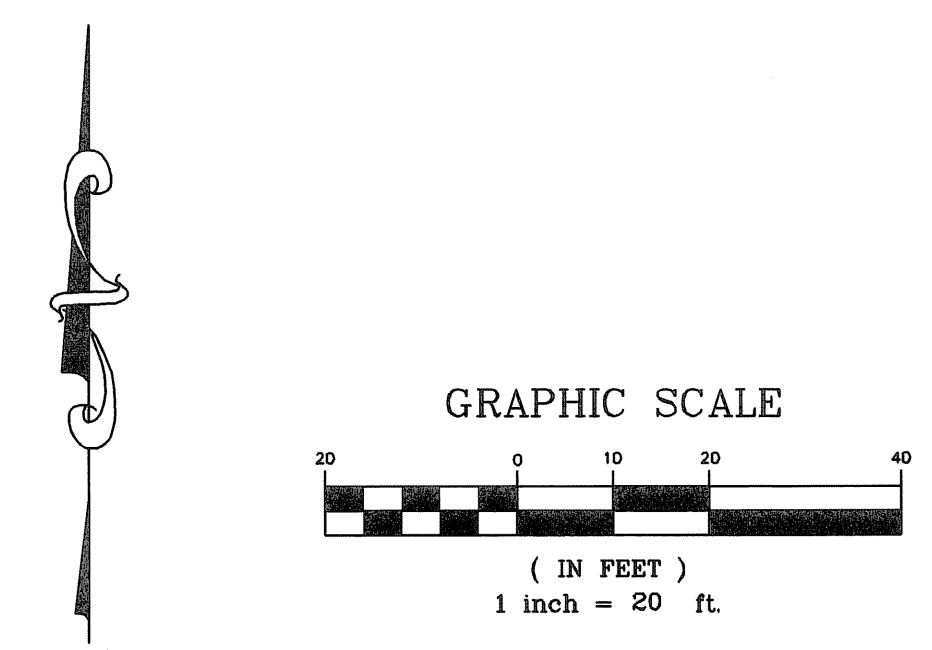
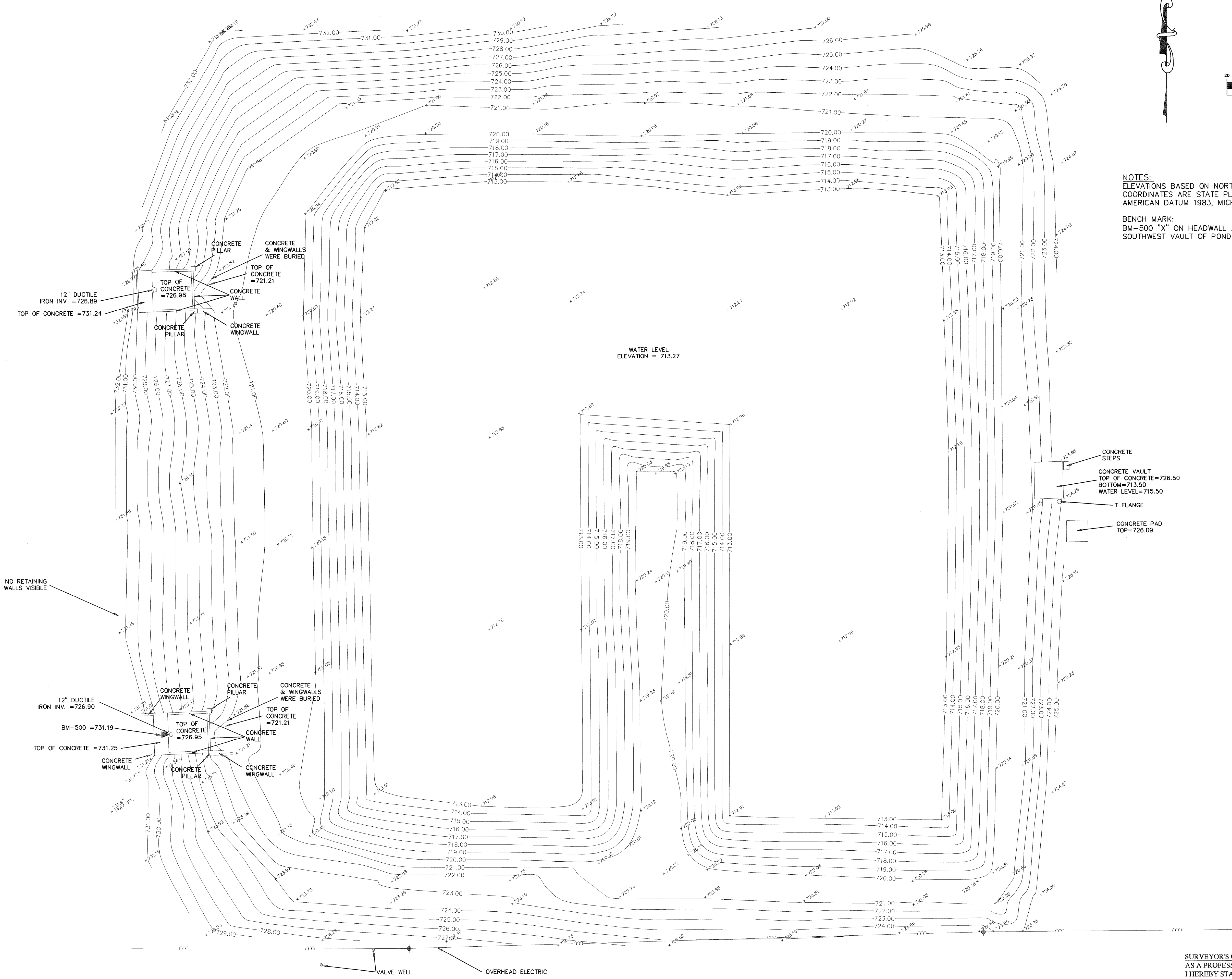
RACER TRUST
BUICK CITY
FLINT, MICHIGAN

LAGOON AREA ZOOM



SEE ALSO CITY OF FLINT DRAWING D-1131
SHEET 7 OF 7, BOOK 351, PAGE 29-37,
29-31, 34-43, 48-49, FOR STORM SEWER
PIPING IN THIS AREA.

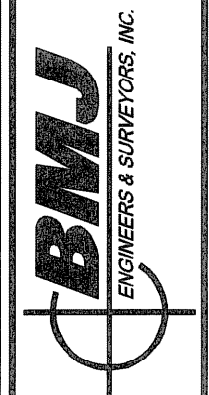
NOTE:
FOR DETAILS OF DRAINAGE
INCLUDING TOWNHOUSE AREA SEE:
ORIGINAL JOB #2000 SHEETS
P-2 AND P-101



NOTES:
 ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988.
 COORDINATES ARE STATE PLANE COORDINATES BASED ON NORTH AMERICAN DATUM 1983, MICHIGAN, SOUTH ZONE-2113.

BENCH MARK:
 BM-500 "X" ON HEADWALL AT WEST SIDE OF VALVE SHUT OFF ON SOUTHWEST VAULT OF POND ELEVATION = 731.19

CIVIL ENGINEERS & LAND SURVEYORS
 519 HURON AVE. PORT HURON, MI 48060
 TEL: 810-984-5596 FAX: 810-984-8760
 Web Page: www.bmjinc.com Email: mail@bmjinc.com



FOR: ARCADIS
 BRIGHTON, MICHIGAN

AS-BUILT OBSERVATIONS AND MAPPING FOR
 DETENTION AT THE NAO FLINT OPERATIONS FACILITY,
 CITY OF FLINT, MICHIGAN

| NO. | REVISIONS | DATE |
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SURVEYOR'S CERTIFICATE:
 AS A PROFESSIONAL SURVEYOR IN THE STATE OF MICHIGAN,
 I HEREBY STATE that the survey work hereon delineated has been
 performed under my supervision.

Carolyn R. Hunter
 Carolyn R. Hunter, P.S. No. 46670

SCALE: 1" = 20'
 DATE: 12-30-09
 SURVEYED: CPK
 DRAWN: SWS
 CHKD: CRH
 JOB NO. 0212-1513
 SH. 1 OF 1

Draft 5-4-22

Lagoon closure

- A Collect sediment samples
- B Rembind treatability
- C Holcim treatability
- D Severson conceptual proposal
- E Global water treatment proposal
- F City resolves water line issue
- G Work plan to EGLE
- H Pump out lagoon
- I Stabilize sediment
- J Backfill lagoon
- K Grade and seed final cap

