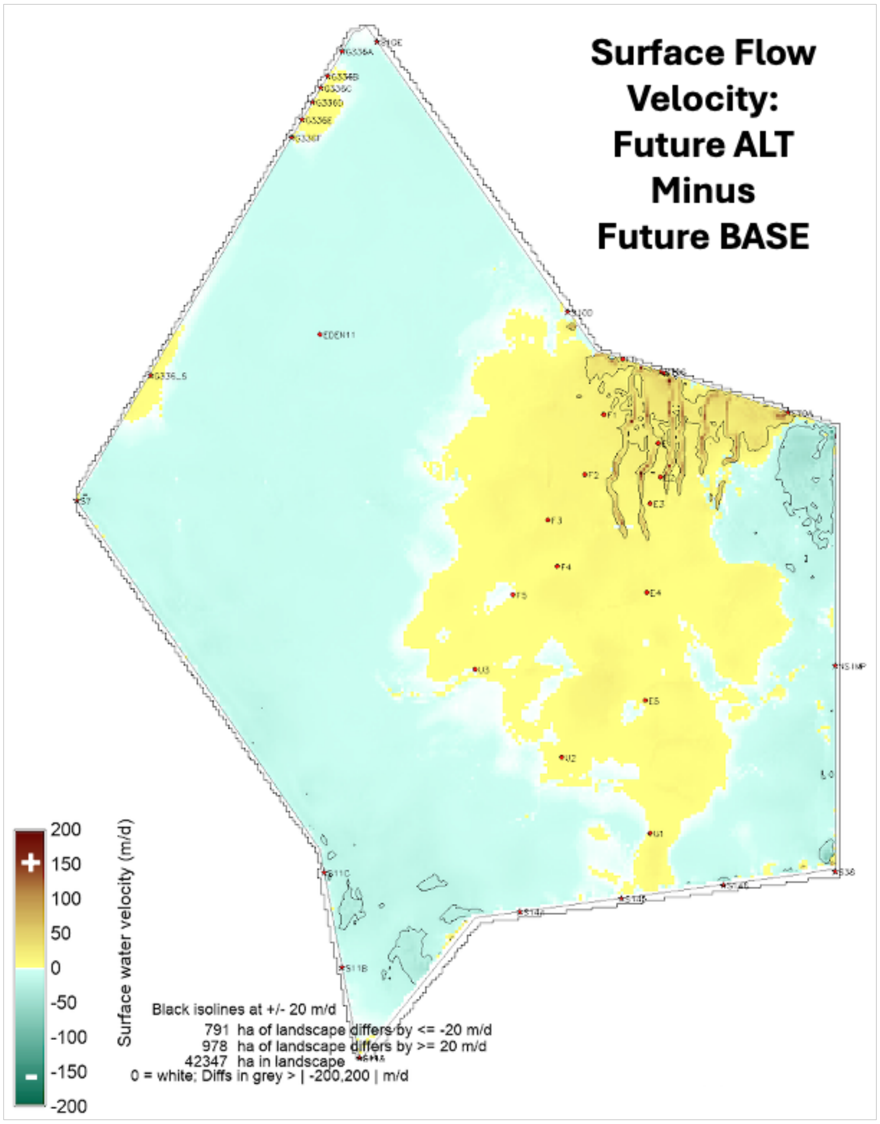
Everglades Landscape Model (ELM) Modeling in Support of Water Conservation Area 2A Flow Restoration:
Task4 Model Application



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Model Application

1.1 Introduction

This Project evaluated and modified the flow characteristics in the northeastern sector of Water Conservation Area 2A (WCA-2A) of the Everglades, thus influencing much of the basin. Of primary interest is the influence of the elevated berm that was originally built along the southern side-boundary of the borrow canal that receives managed inflows from the S10A, -C, and -D structures (the Hillsboro Canal levee is along the northern side-boundary of the borrow canal). If continuous, the berm (hereafter referred to as the NEberm) tends to block or reduce canal-overbank flows to the south into the receiving marsh, and thus "short-circuiting" flows towards the eastern basin boundary.

Extensive efforts were made in our Project's Task 2 Ground Elevation and Vegetation Data report (Fitz 2025) to integrate-synthesize new elevation survey data, and to characterize model-scale elevation of the narrow berm (and of the entire basin). That effort included the synthesis of new marsh vegetation data. The EcoLandMod (https://www.ecolandmod.com/) system was used to develop/refine a new fine-scale (100 m grid) hydro-ecological simulation model for the WCA-2A basin. The Task 3 Model Performance report (Fitz 2026) demonstrated very good/excellent model skill in predicting hydrologic and water quality trends at spatio-temporal scales necessary for analysis of this project.

With this subregional (437 km^2, 169 mi^2) Everglades Landscape Model (ELM3wca2_100) application, the model was then used to evaluate the relative hydro-ecological benefits of alternative scenarios of changes to the NEberm and vicinity. Managed hydrology of these future scenarios were all driven by the SFWMD "Current Schedule" marsh stage regulation schedule, using ELM water management algorithms. All daily managed inflows to the basin were assigned recent historical mean values (temporally constant, differing among water control structures) of chloride and phosphorus concentrations in that flow into the system.

We applied the model to evaluate the extent to which future scenarios — of berm gap alterations, downstream Active Marsh Improvement (AMI) vegetation removal, and/or canal infrastructure modifications — can improve hydroperiods/depths and restore/enhance north-to-south flow in the NEberm area, while assessing potential downstream phosphorus impacts. This Task 4 Model Application report describes the model data & assumptions for future scenarios, and quantifies hydro-ecological responses to those future alternative scenarios in the NEberm area, including responses cascading downstream.

While this Project report presents primary (most informative) model results - and provides a synthesis - the full set of quantitative Performance Measure results are available at: https://www.ecolandmod.com/projects/ELM3wca2a/.

1.2 Input Data

The ELM has been rigorously documented at many levels of detail, in Report formats and online hyperlinked tools. Those documentation products fully described the characteristics of the Input Data (and Code, and Results, and User's Guide, etc). Documentation Reports for ELM versions 2.5.2 through 3.2.5 are found at https://www.ecolandmod.com/publications/index.html#documentation. Hyperlinked conceptual models with pseudo-code (and data) descriptions are found at https://www.ecolandmod.com/models/algorithms_ELM/MainControllerModule.html.

The Task 3 Model Performance report (Fitz 2026) described the data used in the historical, calibration/validation run for this ELM3wca2_100 model application. This Report's Input Data section describes any changes that are specific to future scenarios for this Project. Project ***Alternative scenario data modifications are highlighted in red italic font***.

1.2.1 **Fixed parameters** (text data files)

- **GlobalParms**: Parameters that are globally applied for hydrologic and ecological equations. *Same as used in historical, calibration/validation run, see Task 3 Model Performance report.*
- **HabParms**: Parameters (for hydrologic and ecological equations) that are specific to each model Habitat type (delineated via the Initial Condition Habitat Map). *Same as used in historical, calibration/validation run, see Task 3 Model Performance report.*
- **CanalData.chan**: Canal vector location-topology (in UTM geographic coordinates), with multiple attributes such as levee-presence, canal depth & width, etc. *Same as used in historical, calibration/validation run, see Task 3 Model Performance report.*
- **CanalData.struct**: Water control structure locations (in model-specific grid cell coordinates), with multiple attributes such as source & destination of flow, phosphorus and chloride concentration (if is exterior inflow to basin), and "flag" denoting historical-data driven flow vs. ELM-calculated managed flow (see code documentation, ELM v2.9.0). *Locations are the same as used in historical, calibration/validation run, see Task 3 Model Performance report. The **first 2 bullets below are attributes used for ALL future scenarios; the last bullet shows a single change in an ELM Virtual Structure to plug a canal for "Plug" future Alternative scenarios**:*
    - **Constant-in-time phosphorus and chloride concentrations** for exterior inflows; recent historical observed median values for each structure:

Struct	TP ug/L	Cl g/L
G336A	16	0.146
G336B	16	0.146
G336C	16	0.146
G336D	16	0.146
G336E	16	0.146
G336F	16	0.146
G336G	16	0.146
S10A	12	0.078
S10C	13	0.095
S10D	18	0.106

- **For managed flow calculations:** instead of observed flow data, all managed structures are driven by ELM management algorithm(s) for future scenarios, based on a (common) stage regulation schedule graph (CanalData.graph). For each structure's flow calculation, the algorithm(s) use a flow coefficient (flow_c) in the flow calculation to approximate maximum cfs capacity flows (not relevant for historical data flows). Below is a summary of the relative flow proportions (of flow_c) relative to the maximum flow capacities (which were based on maxima observed in recent ~decades).

Struct	flowProp
G336A	0.1
G336B	0.1
G336C	0.1
G336D	0.1
G336E	0.1
G336F	0.1
G336G	0.3
S10A	0.7
S10C	1.0
S10D	0.7
S11A	0.5
S11B	0.5
S11C	0.5
S144	0.2
S145	0.2
S146	0.2

- **Canal plug option**: nominal scenario runs allow flows along the multiple model segments (connected instantaneously by ELM Virtual Structures) of the S10A,C,D receiving borrow canal (immediately north of NEberm); for the ***"Plug" future Alternative scenarios***, the ELM Virtual Structure VS2A5 is turned off between canal segments R30 & R22, plugging the flow along the canal just upstream of S10A (see Figure 1**).**

CanalData.graph: Stage regulation Current Schedule, which is an annually repeating graph of daily stage targets (Figure 2) that is currently used in WCA-2A management; used to calculate ELM schedule-driven water control structure flows for all future scenarios in this project. The water management infrastructure and operations associated with the schedule (for all Project Schedule-driven simulations) are:

- Inflow sources: G336A,B,C,D,E,F,G; S10A,C,D
- Outflow sources: S11A,B,C; S144,145,146
- Evaluate time-varying Target stage (NAVD ‘88) at WCA-2A 2-17 gauge
- Inflow when stage < (Target - Offset) [2 cm Offset]
- Outflow when stage > (Target + Offset) [2 cm Offset]
- **All Inflow magnitudes assume unlimited sources** (i.e., no limits of water availability, or water quality issues, for inflows)

- **All Outflow magnitudes assume unconstrained flows allowed into receiving basins** (i.e., no limits to water outflows)

1.2.2 Boundary condition flows (text or SFWMD-grid_io data files)

- **CanalData.struct_wat**: *Daily water control structure observed historical (calibration/validation) flow time series data are not relevant in future scenarios (with exception of **LOSOM** ELM-Base-candidate simulation, driven by SFWMM output of daily structure flows).*

- **CanalData.struct_TP and .struct_TS**: *Daily water control structure observed historical (calibration/validation) phosphorus and chloride time series data are not relevant in future scenarios.*

- **BoundCond_stage**: Simulated daily grid_io binary spatial time series (2x2 mile grid), with stage data from the **LOSOM** future scenario run of the SFWMM v7.3.3, used only to calculate head-tail difference along ELM peripheral boundary cells for fluxing (ground)water in-out of the model domain boundary cells.

- **rain.bin and pET.bin**: Observed daily grid_io binary spatial time series (2x2 mile grid), provided by SFWMD for rainfall (daily, 1914 - 2016) and potential ET (daily, 1948 - 2016). Used in future scenarios, assuming stationarity in climate, and thus future weather replicated in the future. *Same as used in historical, calibration/validation run, see Task 3 Model Performance report.*

1.2.3 Initial Condition (IC) maps (generic binary spatial data files)

- **Elevation:** Initial (dynamic in simulation) land elevation, using the RST interpolated 2004 HAED survey data; we then applied an overlay of fine-scale observed-calculated NEberm-specific elevation data (within a NEberm "mask"). Documented in Task 2 Report (Fitz 2025). Figure 3 shows the elevation data for the entire basin (***no-GAP Alternatives***), and zoomed into the NEberm area to show the 8 elevation gaps in the berm (***GAP Alternatives***).
- **HAB:** Initial (static in simulation) habitat type, using the 2018 Gann vegetation classes crosswalked to ELM habitats and resampled at 100 m grid resolution. Documented in Task 2 Report (Fitz 2025). Figure 4 shows the habitat data for the entire basin (***no-AMI Alternatives***), and zoomed into the NEberm area to show the modified AMI habitats (***AMI Alternatives****)*.

- **MacBio:** Initial (dynamic in simulation) macrophyte total biomass, using the 15-year (1980) "spin-up" value from a 1965-2016 baseline simulation. Figure 5 shows the initial biomass data for the entire basin (***no-AMI Alternatives***), and zoomed into the NEberm area to show the modified AMI biomass (***AMI Alternatives****)*.

- **soilTP:** Initial (dynamic in simulation) phosphorus concentration in the 0-10 cm layer of soil, using the final (2010) map values from the historical calibration/validation ELM3wca2_100 simulation. Used in all future scenarios (including Base).

- **soilBD, soil_orgBD:** Initial (static in simulation) soil bulk density, and organic bulk density (adjusted for percent ash-free) in the 0-10 cm layer of soil. *Same as used in historical, calibration/validation run, see Task 3 Model Performance report.*
- **HydrCond:** Initial (static in simulation) hydraulic conductivity of the subsurface aquifer up to land elevation. *Same as used in historical, calibration/validation run, see Task 3 Model Performance report.*
- **SfWt, Unsat:** Initial (dynamic in simulation) surface water and unsaturated water depths, respectively. Using the 10 d "spin-up" value of a 1965-2016 baseline simulation (that was based on ELM3reg500 1965-2010 simulation, that was based on 2x2mile SFWMM output). Used in all future scenarios (including Base).
- **other maps:** Initial (static in simulation) maps of Basin/Indicator Regions (BIRs, Figure 6), boundary-flow-allowances, model domain delineation. *Same as used in historical, calibration/validation run, see Task 3 Model Performance report.*

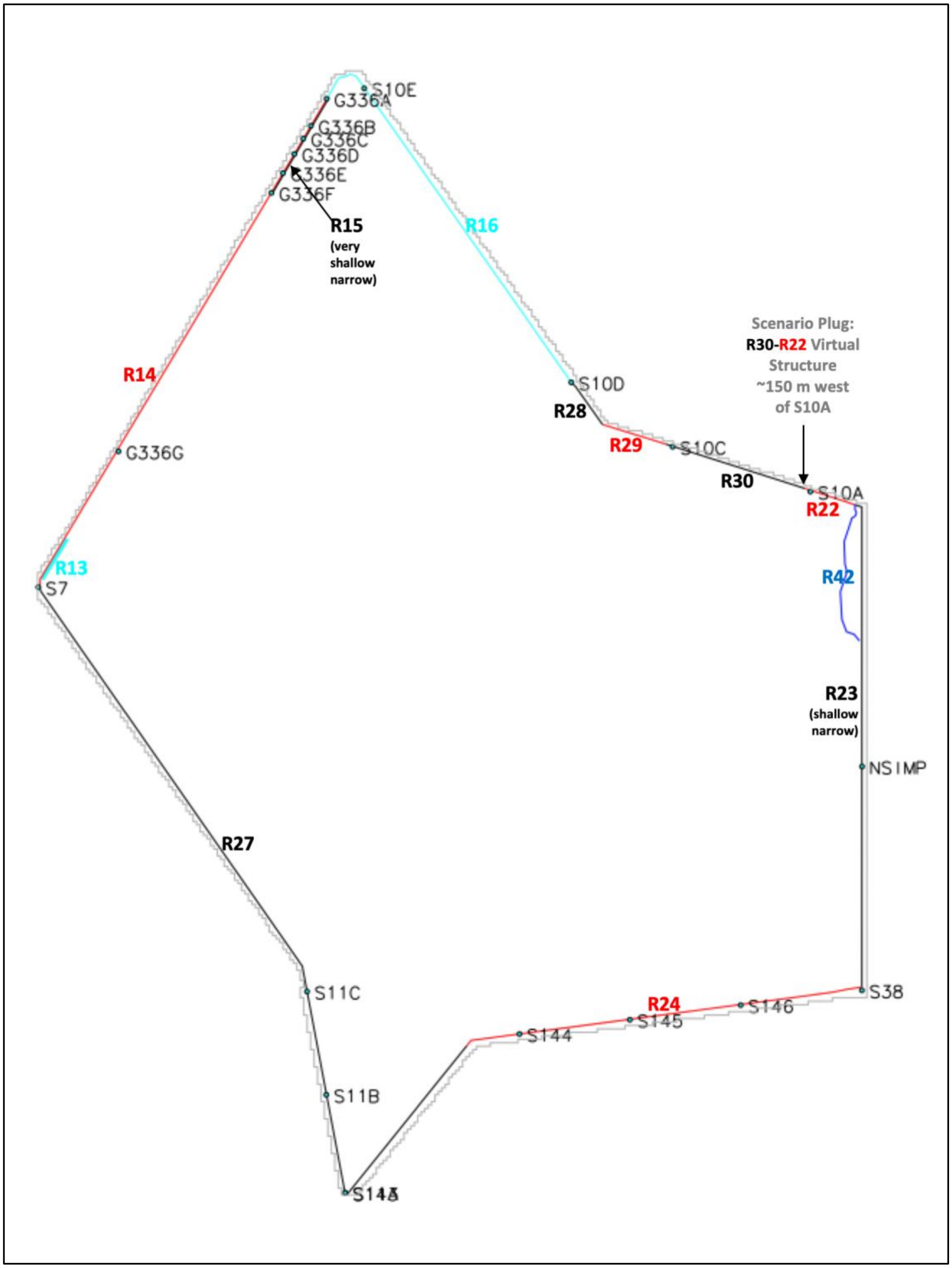


Figure 1. ELM3wca2 infrastructure, showing the operating canal/levee vectors and water control structures. ELM Reach IDs are shown on the canal side of a bounding levee. G336G flows into the marsh via levee degradation, along R13. The only airboat trail (no levee) used in (all) simulations is R42. ELM Virtual Structures (see text) instantaneously connect ELM reaches R28-R29, R29-R30, R30-R22, R22-R42, R23-R24, R27-R24. Alternative scenario(s) plug location shown.

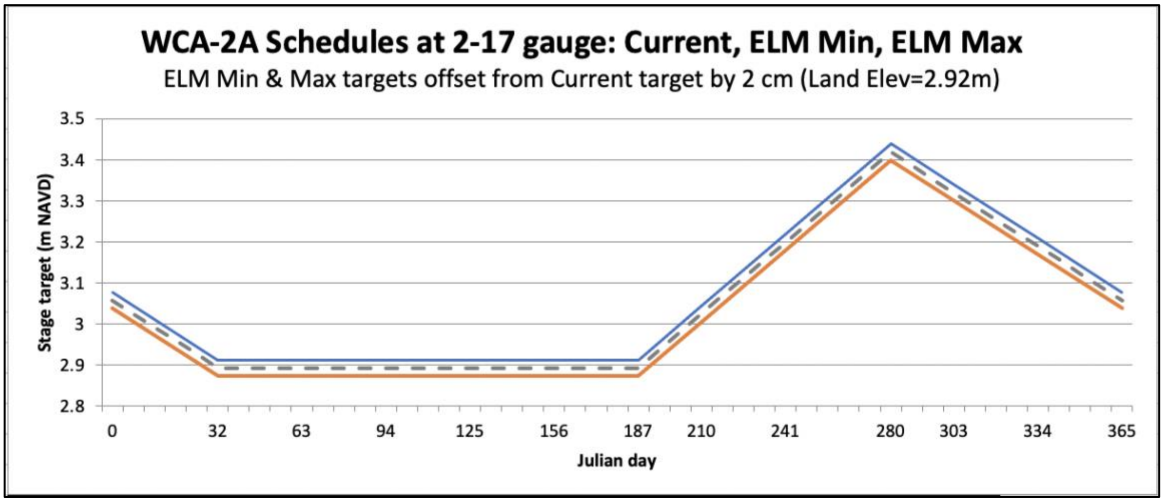


Figure 2. The Current stage regulation schedule for the 2-17 gauge in WCA2A, used in the future Base and all future Alternatives. This annual (repeating) time series is the targeted head or tail water stages for calculated flows of rule-based water control structures.

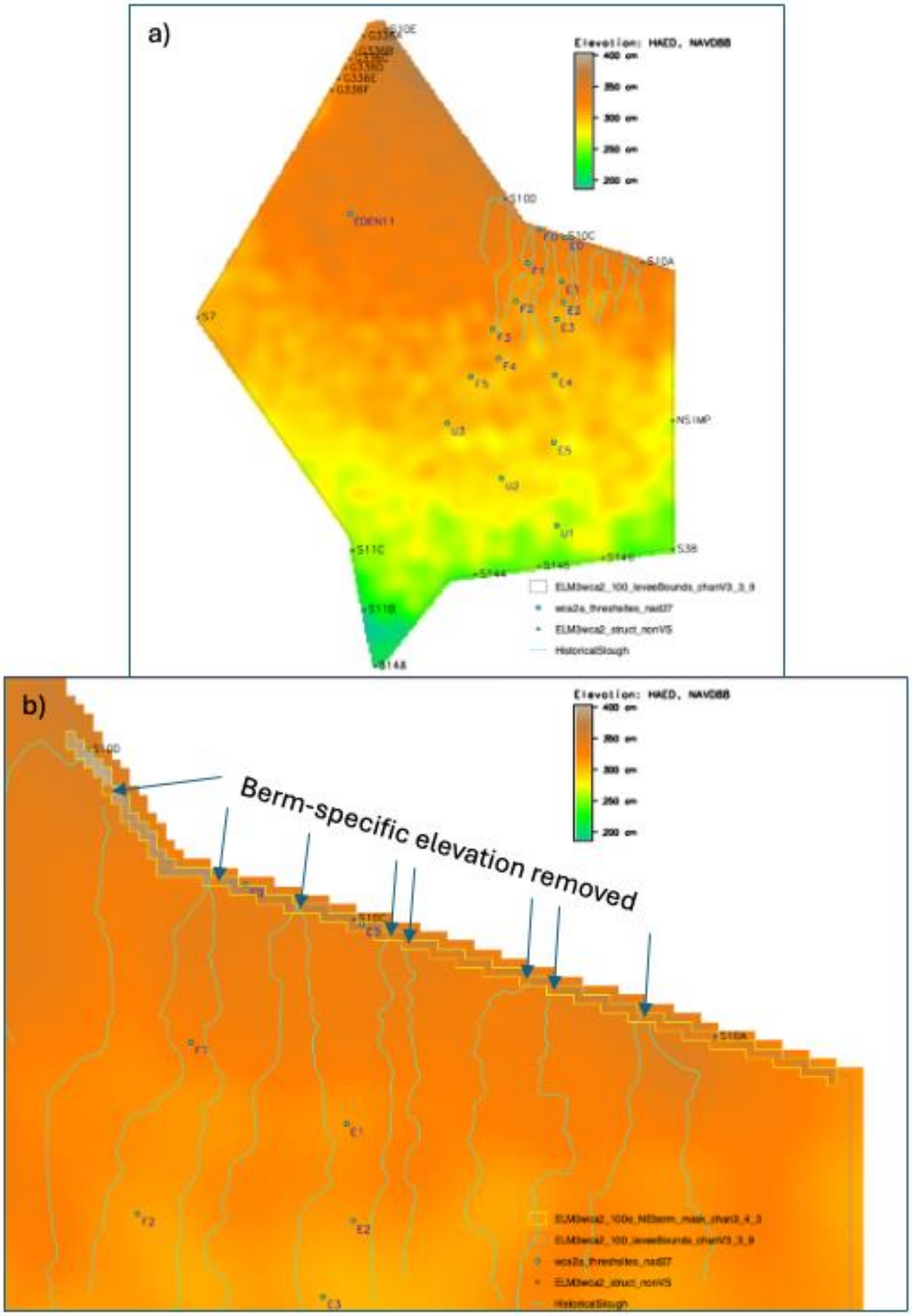


Figure 3. The initial land surface **Elevation**, for the a) **no-GAP** and b) **GAP** Alternative scenarios (see later section on Alternative Scenario Assumptions). The arrows point to 8 single-cells for which the berm-specific elevation data were removed (berm gaps). The Historical Slough vectors are for reference-only, and are not model inputs. See text for derivation details.

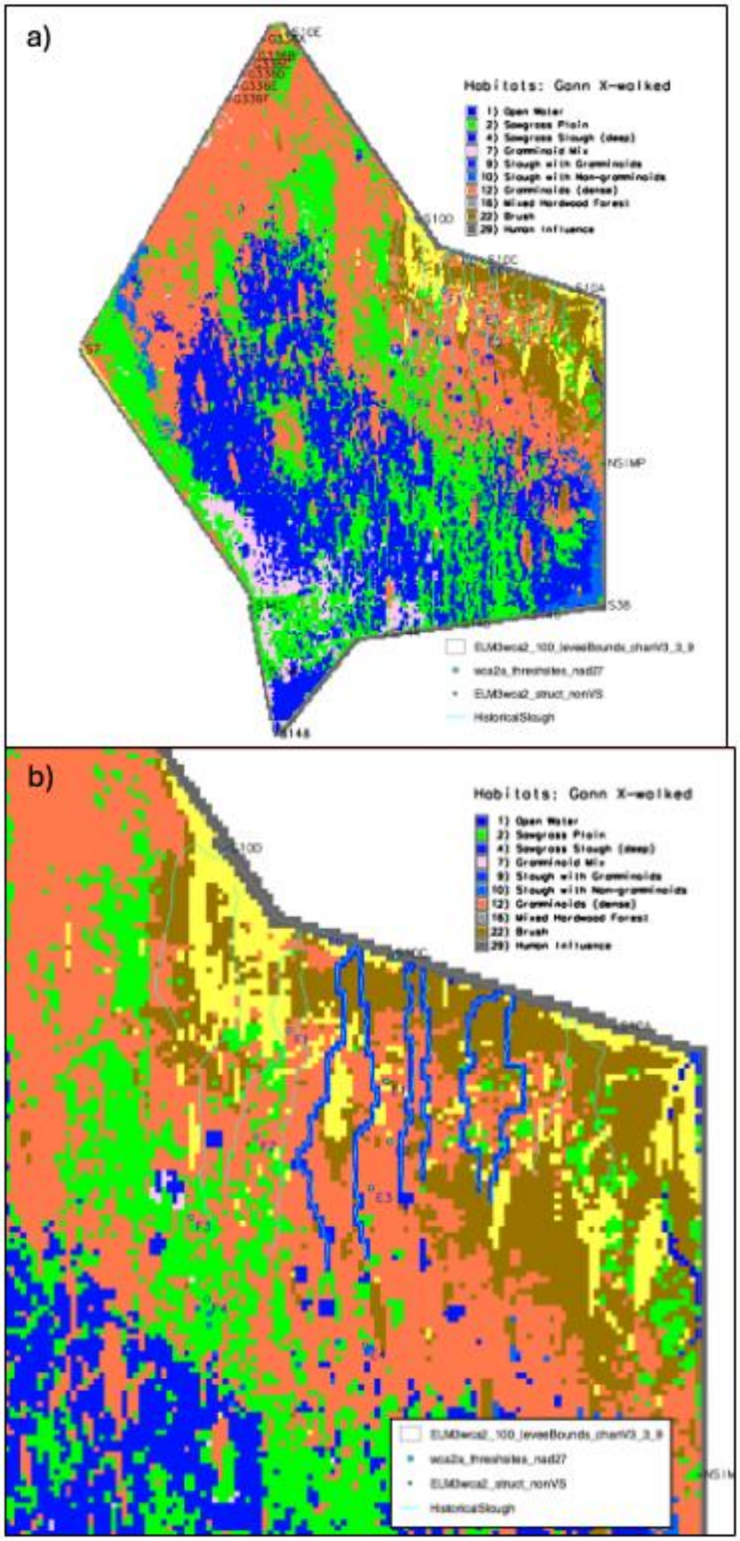


Figure 4. The initial Habitat (**HAB**) type, for the a) **no-AMI** and b) **AMI** Alternative scenarios (see later section on Alternative Scenario Assumptions). The Historical Slough vectors are for reference-only, and are not model inputs. See text for derivation details.

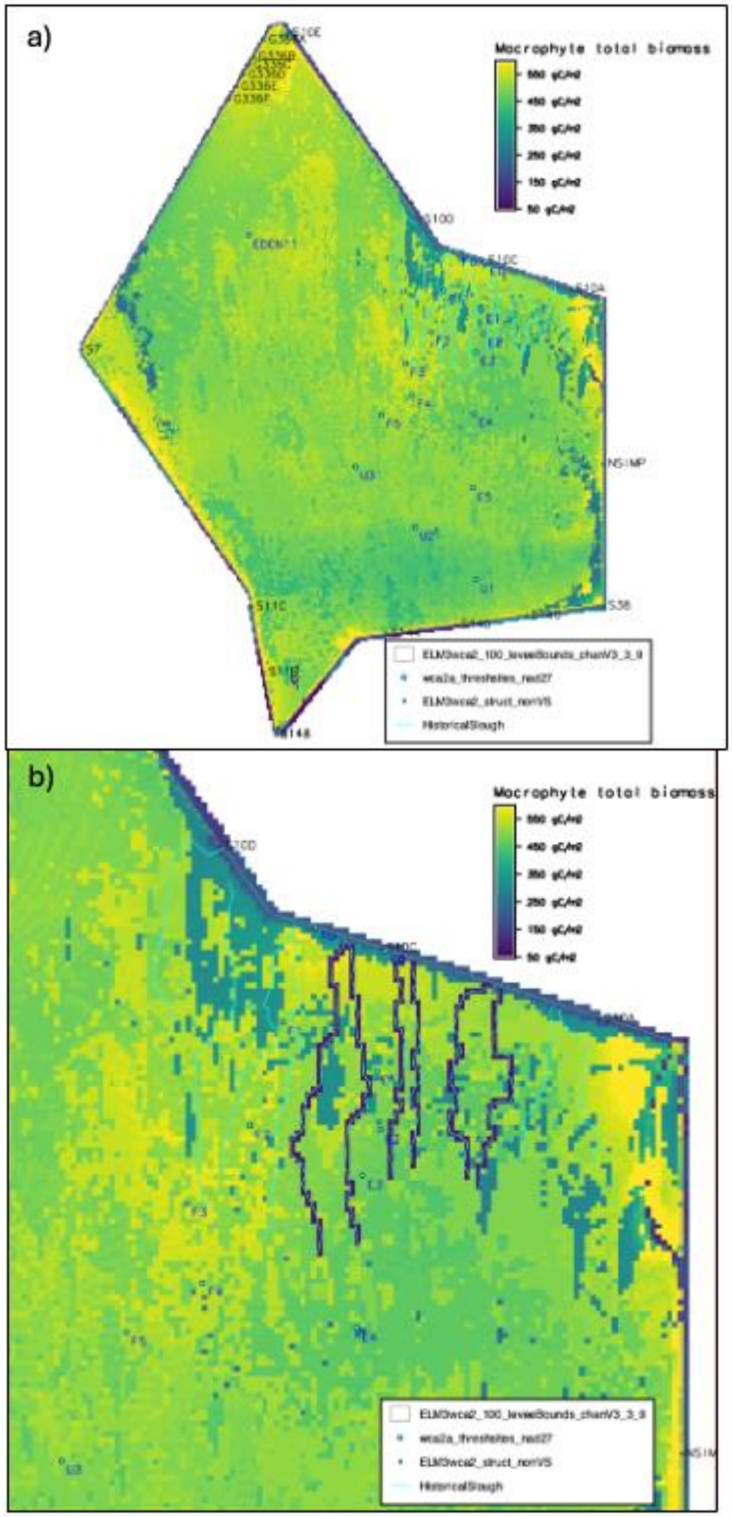


Figure 5. The initial macrophyte total biomass (**MacBio),** for the a) **no-AMI** and b) **AMI** Alternative scenarios (see later section on Alternative Scenario Assumptions). The Historical Slough vectors are for reference-only, and are not model inputs. See text for derivation details.

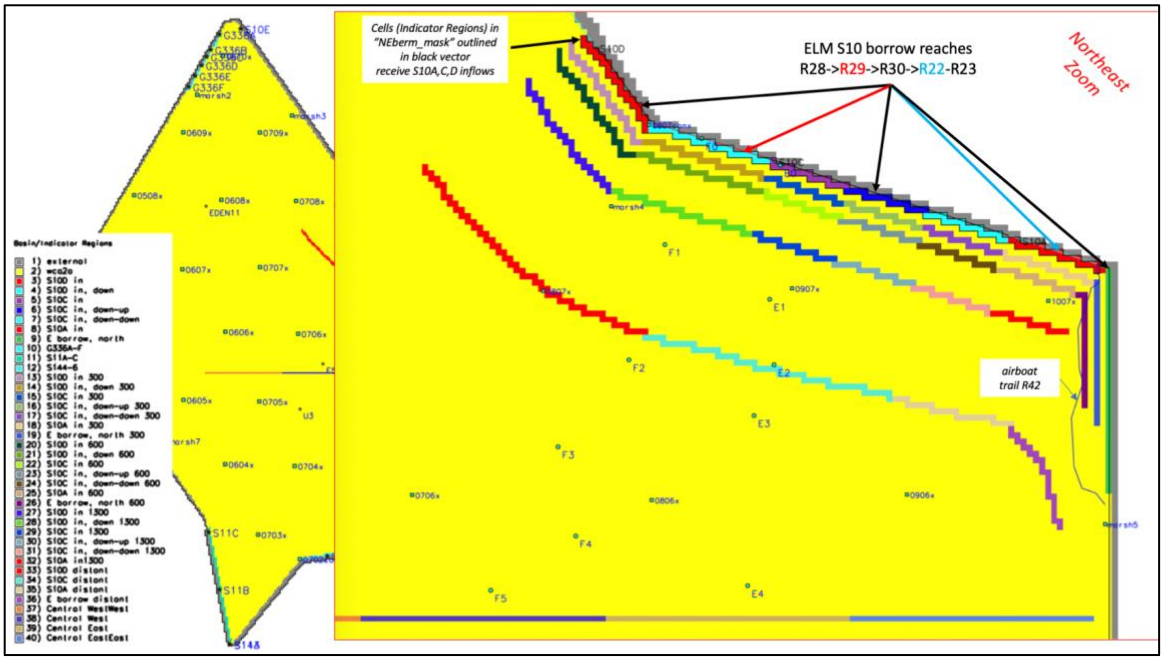


Figure 6. The delineation of ELM3wca2_100 Basin/Indicator Regions (BIRs).

1.3 Assumptions - General

In simulating the response of the Greater Everglades to scenarios of future managed flows of water, projections of those managed flows through water control structures are required. The South Florida Water Management Model (SFWMM) had been the accepted tool for such regional planning, but now is generally replaced by the Regional Simulation Model. The SFWMM v7.3.3 output of the **LOSOM** simulation (see above **Input Data** section) used here was deemed acceptable for our use, albeit perhaps not for other formal planning projects.

The assumptions that are involved in initializing and simulating regional water management for future project alternative plans (i.e., scenarios) are relatively complex, involving the entire south Florida regional system. Model developers and stakeholders collaborated on developing the assumptions concerning future climate, land use, water use, and many other factors. Documentation of the SFWMM and its primary assumptions is found at https://sfwmd.gov/science-data/modeling, while assumptions specific to particular planning projects should be found in a project's web site.

In simulating project planning alternatives, the SFWMM uses the climate record that was observed between 1965 and 2016. This 52-year period encompasses periods of both extreme rainfall and drought conditions. ***Relative differences in system behavior under different future project alternatives reflect how the system would likely respond in the future to the alternative management, if driven by the same climate forcing data that has been observed in the past***. In other words, we (all) assume climate stationarity, in that the future climate will be approximated by recent historical climate.

An often-confusing characteristic of this stationarity assumption is the use of the historical 1965-2016 dates in model output for future scenarios: future scenario output dates simply reflect the "re-used" historical climate, and users must remember these are NOT historical simulations.

The ELM uses spatio-temporal databases of 1965-2016 rainfall and potential evapotranspiration that are identical to inputs to the SFWMM. In applying the ELM to evaluate future conditions, a number of other assumptions are generally required for initializing and simulating ecological dynamics. As with the SFWMM, the specific assumptions for the ecological simulation must be determined for each project application.

All equations and related algorithm assumptions remain unchanged from historical simulations, and thus no changes were made to source ELM code for future scenarios. As stated in the above **Input Data** section, all habitat-specific and Global parameters remained unchanged from (regional and WCA-2A) historical simulations.

By design, the full suite of model and data assumptions are generically the same for all ELM applications, as fully described in the ELM v2.5 - v3.2 Documentation Reports. (See Model Structure Chapters in ELM v2.5 through v2.9 Documentation Reports, with added-module updates to v3.2, at https://www.ecolandmod.com/publications/index.html#documentation). Assumptions that are specific to this project are indicated in the above **Input Data** section, and in the below scenario-specific sections of this report.

1.4 Assumptions - Base Scenario

For Project evaluations, a standard practice is to have a baseline simulation to use in making relative comparisons of each Project Alternative to the Base. There were two candidate simulations to use as a future Base scenario for the project: **LOSOM Base** and **Schedule Base.** The two 52 year future simulations differ only in the source of the managed flows through water control structures that largely drive the WCA-2A basin hydrology.

Referencing the above **Input Data** section, the **LOSOM Base** uses daily output from the SFWMM for all water control structure flows (via an input text file, **CanalData.struct_wat**). The **Schedule Base** uses ELM water management algorithms, reading the schedule targets from **CanalData.struct_graph**, to calculate daily structure flows that depend ONLY on the status of stage in WCA-2A.

While the locations of all water control structures (in **CanalData.struct**) are shared between the two simulations, in the **LOSOM Base** there are two additional flows (but at existing locations) of SFWMM-model-structures that have flows that bypass STA-2, and thus have higher TP concentrations (in **CanalData.struct**). (This is relatively minor in the long-term, but has time-specific effects in the receiving marshes).

The (**CanalData.struct_graph**) Current Schedule that drives the ELM water control structure operations for the **Schedule Base** (and all other future ELM Scenarios in this project) was shown in Figure 2. Because real-world (and SFWMM) water management of WCA-2A must consider water supply, flood control, and external-Everglades-basin needs in areas upstream and downstream, the **LOSOM Base** frequently does not adhere to the Current Schedule for stage regulation in WCA-2A. Comparative (**LOSOM** vs. **Schedule Bases**) stage hydrograph results are presented in a later section on **Base selection - LOSOM vs. Schedule**.

1.5 Assumptions - Alternative Scenarios

As stated in the **Introduction** section, the area of interest in this Project is the northeast region associated with the berm (NEberm) along the borrow canal receiving flows from S10A, S10C, and S10D.

The Alternative scenarios induced elevation gaps in the NEberm (**Gaps**), removed vegetation down to "slough" levels in the adjacent-downstream marsh (Active Marsh Improvement, **AMI**), and/or plugged flow in the borrow canal itself (**Plug**). No changes were made to the canals/levees (**CanalData.chan**) nor the water management criteria (**CanalData.graph**). Most other data were likewise unchanged for Alternative scenarios, as documented for all of the input data files in the above **Input Data** section. Table 1 provides an overview of the Alternative scenarios, with their data-details described following the Table.

Scenario Name	RunDate	RunLength	Scenario Description
sched52yr_v7	6/4/26	52 yr	Base (no action)
sched52yr_gap8_AMI234_plug_v7	6/6/26	52 yr	AMI234, 8 Gaps, 1 Plug
sched52yr_gap8_AMI234_v7	6/6/26	52 yr	AMI234, 8 Gaps
sched52yr_gap8_plug_v7	6/10/26	52 yr	8 Gaps, 1 Plug
sched52yr_plug_v7	6/10/26	52 yr	1 Plug
sched52yr_gap8_v7	6/10/26	52 yr	8 Gaps

Table 1. The future Alternative scenarios (including the future Base scenario) used in this Project. The RunDate is the date that the simulation was executed. All simulations encompassed the 52 year, January 1965 - December 2016 climate record. AMI234 refers to the 3 pairs (2, 3, 4 out of 6) of historical sloughs used to define the Project's AMI locations. The 8 Gaps refer to NEberm elevation gaps, and the 1 Plug refers to the canal plug in the NEberm borrow canal. See **Input Data** section above for spatial definitions of these data, with details of their derivations described below.

The **AMI** locations were defined by interpretations of historical aerial photos taken prior to levees impounding WCA-2A (C. Zweig, pers. comm.). Twelve (6 pairs of) historical sloughs were defined in the original effort, and six (3 pairs of) sloughs were determined to be best for use in this Project modeling effort (SFWMD team, pers. comm.). The six slough vectors were rasterized at 100 m resolution, then used to define the 6 **AMI** slough modifications to the initial **HAB** and **MacBio** maps (**Input Data** section).

The berm elevation **Gaps** locations were derived directly from the above historical sloughs, by determining the (model grid cell) locations where the six **AMI** sloughs crossed the (model grid cell) berm. Based on further discussion (SFWMD team, pers. comm.), two additional **Gaps** were assigned to model grid cells at the locations where two of the other historical sloughs crossed the berm (for a total of 8 **Gaps** in the berm elevation). These 8 **Gaps** were incorporated into the initial **Elevation** map (**Input Data** section).

The below bullets further define the data derivations of each component of the Alternative scenario-changes:

- **Gaps**: The elevation gaps in the NEberm were created by modifying the masked berm elevation data file. As defined/described in the Task 2 report (Fitz 2025), this masked berm elevation file was created by resampling 10m resolution LiDAR data (NAVD '88), within a (100m) ~cell-wide swath of the berm. To create the basin-wide elevation map that includes the berm, the basin-wide elevation map cells (NAVD '88) were then superimposed/replaced by those (masked) berm cells. To create new berm **Gaps**, individual berm elevation cells in the masked berm elevation file were nullified at targeted cell locations, and then this was superimposed onto a (new) basin-wide map. Thus, berm elevation is "removed" from the berm cells only, in the new basin-wide **Elevation** (NAVD '88) map. See Figure 3.

- **AMI**: For conversion to the new **AMI** habitats, all model grid cell locations that encompassed new **AMI** habitats were changed to **HAB**=9=Slough with Graminoids. For modification of initial macrophyte biomass (**MacBio**) in the new **AMI** habitats, all model grid cell locations that encompassed new **AMI** habitats were decreased to initial, slough-level, **MacBio** of 75 gC/m^2. See Figures 4 and 5.

- **Plug:** To create a plug that prevents all canal segment-segment flows, the ELM Virtual Structure VS2A5 was turned off between canal segments R30 & R22, plugging the flow along the borrow canal just upstream of S10A (defined in **CanalData.struct**; see Figure 1 for location**).**

1.6 Performance Measures

Table 2 describes all of the Performance Measures that were developed for evaluating relative differences among the Base and Alternative scenarios. These Performance Measures were developed via collaborations among EcoLandMod and the SFWMD science team. The matrix describes the spatial and temporal characteristics of each Performance Measure, and brief documentation of the associated model variable. More detailed understanding of the variables, and their interactions, is found in the ELM v2.5 (through v2.9) documentation (url provided earlier).

ELM3wca2_100 Performance Measures

Basin mapset: has 3 maps for a variable: left=Base; right=Alternative; middle=Difference (one .png graphic file per mapset)

- Base & Alternative maps have contours at 2 thresholds; Difference map has (2) contours of "meaningful" ± differences
- The marsh-area of each of the above contour values are shown in brief table on each map
- *Each Alternative scenario suite (multiple variables) of mapsets includes a tab-delimited .txt file table w/ all above marsh-areas, all variables*

BIR grapshs: for each BIR, a comparative monthly time series graph of a variable's values for the Base vs. the Alternative (1 .xlsx file per variable)

Variable	Spatial_a	Temporal_a (#mapsets)	Spatial_b	Temporal_b (#graphs)	Units	Variable Description [Output Variable's BaseFileName]
Hydrology						
Surface water depth (30d mean)	Basin mapset	SRWD (4), POS_mean (1)			m	Surface water depth [Positive values of HydRelDepPosNegAvg=depth relative to land elevation, ±]
Surface water velocity (30d mean)	Basin mapset	SRWD (4), POS_mean (1)			m/d	Surface water flow velocity of net daily horizontal advection (all directions) [SF_WT_VEL_magAvg]
Surface water inflow			BIR graphs	Monthly Tseries (40)	acre-ft/mon	budg_Wacr: Budget of surface water volume inflow to specified BIR
Surface water Cl conc (30d mean)	Basin mapset	SRWD (4), POS_mean (1)			g/L	Chloride ("salt") concentration in surface water (when depth ≥ 10cm) [SaltSfAvg]
Surface water Cl inflow			BIR graphs	Monthly Tseries (40)	Mg/mon	budg_S: Budget of surface water chloride ("salt") mass inflow to specified BIR
Hydroperiod	Basin mapset	POS_mean (1)			days	During water-year (begin/end julian day=273), days that surface water depth is > 0.01 m [HydPerAnn]
Phosphorus						
Surface water P conc (30d mean)	Basin mapset	SRWD (4), POS_mean (1)			mg/L	Phosphorus concentration in surface water (when depth ≥ 10cm) [TPSfWatAvg]
Surface water P inflow			BIR graphs	Monthly Tseries (40)	Mg/mon	budg_P: Budget of surface water phosphorous mass inflow to specified BIR
Floc P conc (30d mean)	Basin mapset	SRWD (4), POS_mean (1)			mgP/kgOM	Phosphorus concentration in the flocculent organic matter [FlocP_OMrepAvg]
Soil P conc	Basin mapset	EndValue (1)			mgP/kg_soil	Phosphorus concentration in soil total mass (0-10cm) [TPtoSOILAvg]
Integrated Ecology						
P accumulation rate	Basin mapset	POS_rate (1)			mg/m2/yr	Phosphorous mass change rate in ecosystem (live/dead/water storage) [PaccumRate]
Peat accretion rate	Basin mapset	POS_rate (1)			mm/yr	Land elevation change rate in ecosystem (assumes constant soil bulk density) [PeatAccreteRate]

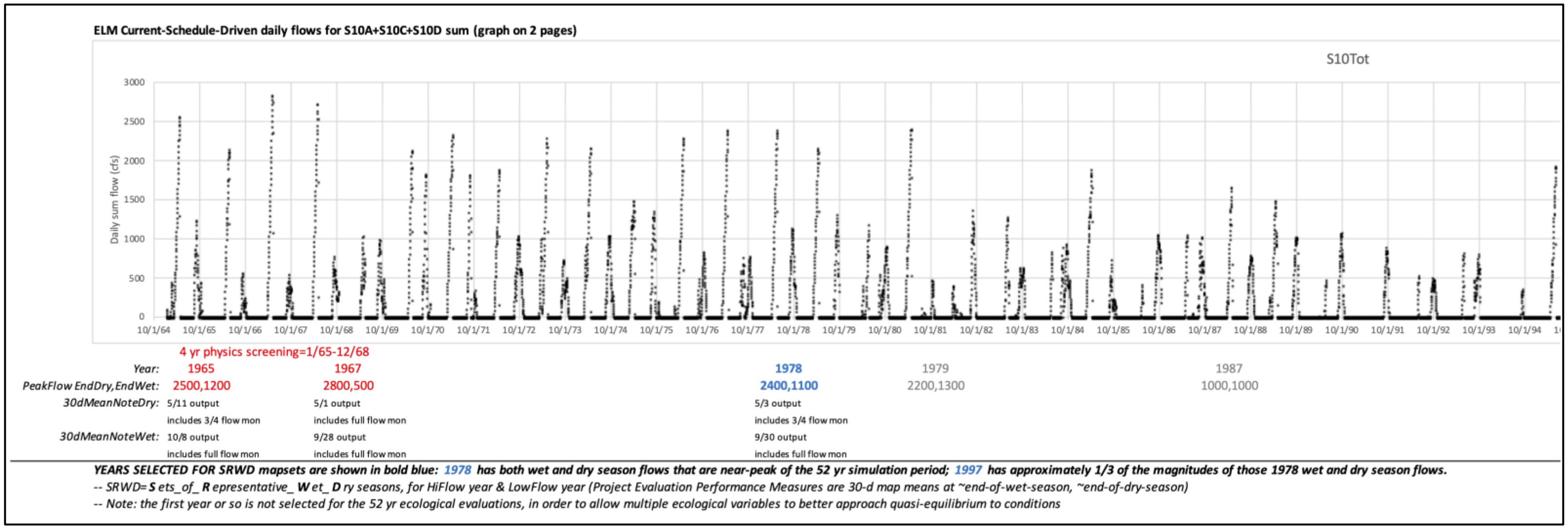
SRWD=Sets_of_**R**epresentative_**W**et_**D**ry seasons, for HiFlow year & LowFlow year (30-d means at ~end-of-wet-season, ~end-of-dry-season)

BIR=Basin/IndicatorRegion - swaths of model grid cell aggregations (see previous map Figure of 40 BIRs, focused on gradient from NE region)

POS=Period of Simulation; Tseries=Time series graphs

All raw output data available in tab-delimited text (BIR, TSeries @ monthly intervals) or netCDF (maps, most TSeries @30d mean intervals)

Table 2. The hydro-ecological Performance Measures used to evaluate the relative differences between future Base and future Alternative scenario(s).



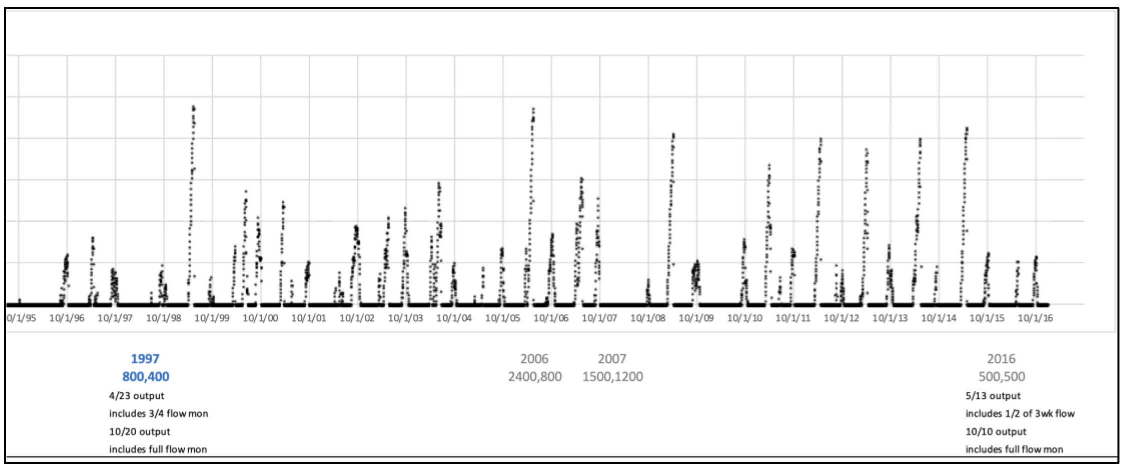


Figure 7a & b. The simulated schedule-driven daily flows in the (sum of) S10A,C, and D, for the ELM-Sched Base run. Notations (below graph itself) show the peak flow magnitudes in the ending 30-d period of the dry season and of the wet season, for selected years. The relevant ELM spatial output maps are mean values from that 30-d period; other Figure notations show the end-period-date, and the ~proportional extent to which positive flows were contained within that 30-d period.

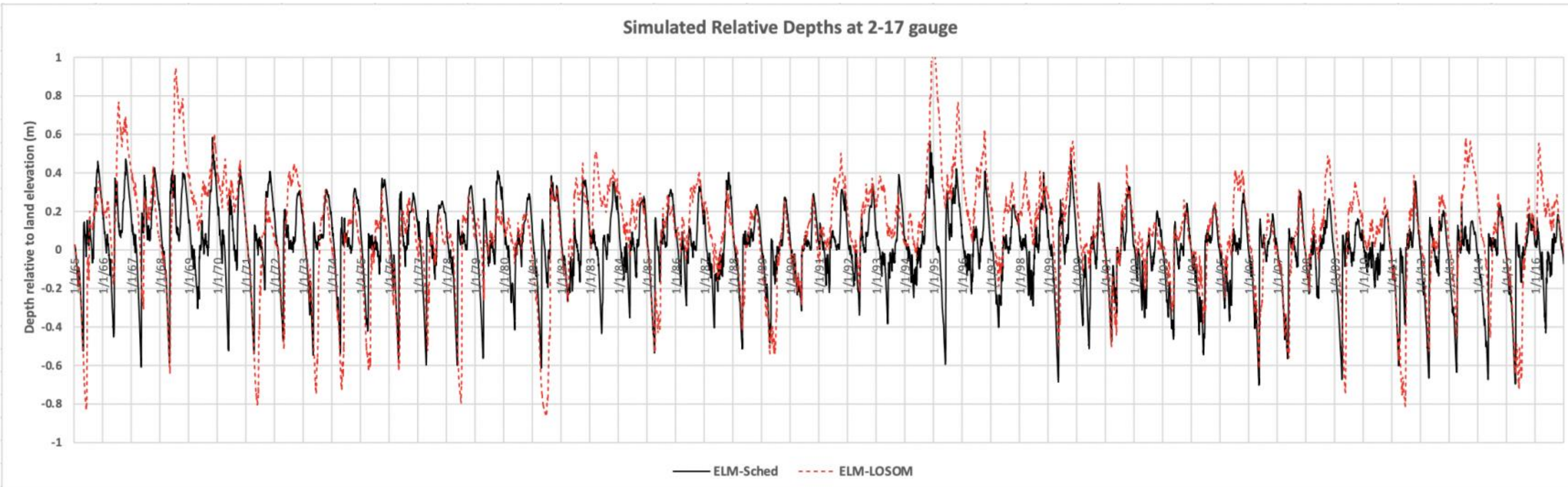
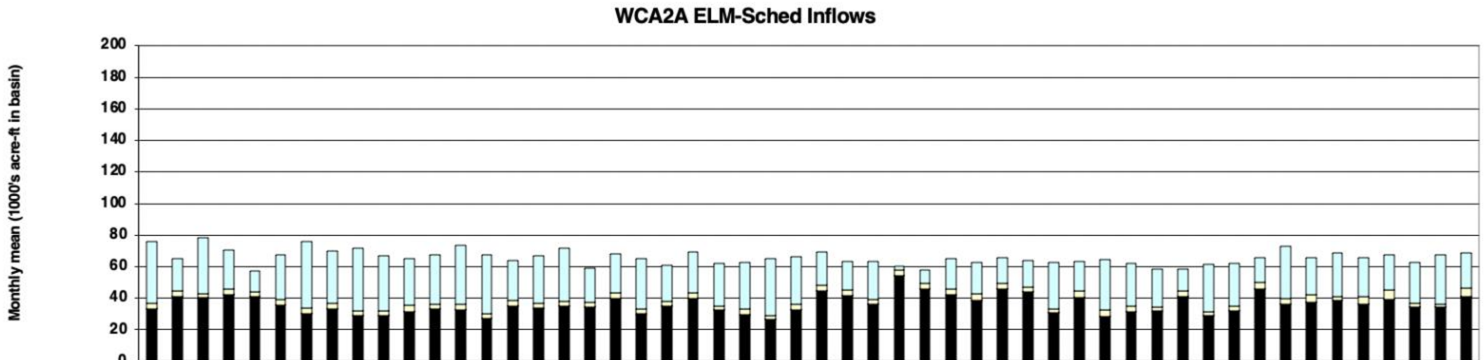
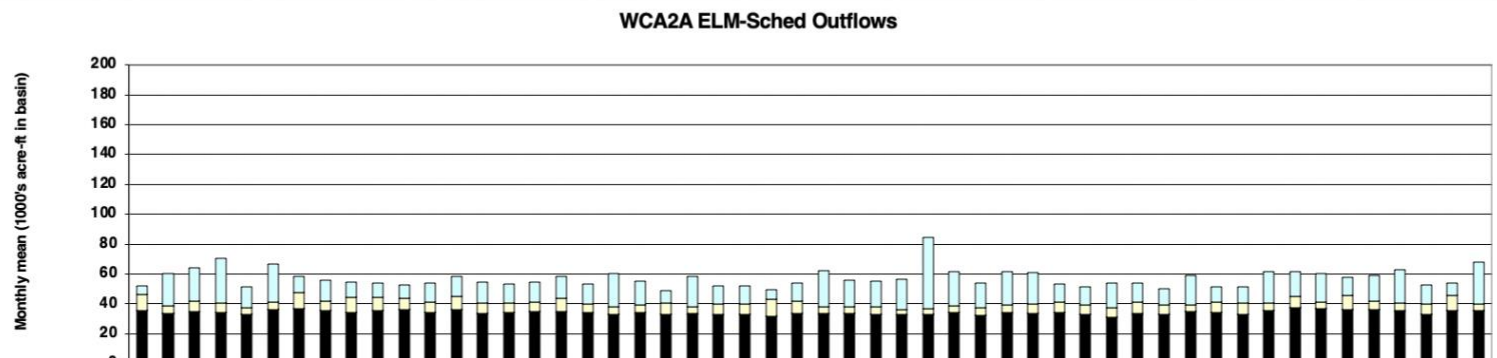


Figure 8. Comparison of two future Base-candidate simulations: ELM3wca2_100 model output of water depth relative to land surface elevation at the 2-17 gauge in WCA-2A. The ELM-Sched was the 52 year simulation that used ELM water management algorithms that calculated structure flows, towards meeting daily stage targets (defined in Figure 2). The ELM-LOSOM was the 52 year simulation that used SFWMM v7.3.3 daily output of water control structure flows, which were input data to all ELM managed water control structures.



	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
Structure In 2	39	20	36	24	13	28	42	33	39	35	30	31	37	37	25	30	34	22	25	32	23	26	27	29	36	30
Groundwater In 2	4	4	3	4	3	3	4	3	3	3	4	3	3	3	3	3	3	3	3	3	3	4	3	4	3	4
Seepage In 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rain 2	33	41	40	42	41	36	30	33	29	29	31	33	33	27	35	33	35	34	40	30	35	40	32	29	26	32

	91	92	93	94	95	96	97	98	99	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Structure In 2	21	19	24	3	8	20	20	17	17	30	19	32	27	24	14	30	27	15	33	23	28	25	23	26	31	22
Groundwater In 2	4	3	3	4	4	4	4	3	3	3	4	4	3	3	4	3	3	4	4	5	2	5	6	3	2	5
Seepage In 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rain 2	45	42	36	54	46	42	39	46	44	31	41	29	32	32	41	29	32	46	36	37	39	36	39	34	34	41



	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
Structure Out 2	6	22	22	30	15	25	11	14	10	10	9	13	13	14	13	13	14	14	22	16	9	20	12	12	7	12
Groundwater Out 2	11	5	7	6	4	5	11	6	10	8	7	7	9	7	6	6	9	6	5	6	7	5	7	7	11	8
Seepage Out 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Evapotranspiration 2	36	34	35	34	33	36	37	36	34	36	36	34	36	34	34	35	35	34	33	34	33	33	33	33	32	33

	91	92	93	94	95	96	97	98	99	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Structure Out 2	24	18	17	21	48	23	17	23	21	12	12	16	12	11	20	10	11	21	17	19	12	17	22	13	9	28
Groundwater Out 2	5	5	5	3	4	5	5	5	6	7	6	6	8	7	5	7	7	5	7	5	10	6	6	7	10	4
Seepage Out 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Evapotranspiration 2	33	34	33	33	33	34	32	34	33	34	33	31	33	33	35	34	33	35	37	36	36	36	35	33	35	35

Figure 9. Simulated annual water budget, all inflows to and outflows from the WCA-2A basin. The future ELM-Sched was the 52 year simulation that used ELM water management algorithms that calculated structure flows, towards meeting daily stage targets (defined in Figure 2).

The temporal attribute selection of the **S**ets_of_**R**epresentative_**W**et_**D**ry seasons (**SRWD**, referenced in Table 2) was based on the magnitudes of the schedule-driven flows for the sum of the S10A,C,D structures for a Base run (Figure 7a & 7b). Whereas water-year rainfall magnitudes is one component of determining years of high vs. low managed flows, we determined that temporal pulses of schedule-driven flows - which consider both the antecedent water levels and rainfall - were most appropriate for our Project objectives. This (Table 3) selection of **high-flow** and **low-flow SRWD** most effectively captures the types of S10 flow events in the NEberm region, which is our focus.

Managed S10 flow regime	Season	30-d mean output date
High-flow year = 1978	End-of-Dry	19780503 (05/03/1978)
	End-of-Wet	19780930 (09/30/1978)
Low-flow year = 1997	End-of-Dry	19970423 (04/23/1997)
	End-of-Wet	19971020 (10/20/1997)

Table 3. The **SRWD** output map dates[1], for the high-flow and low-flow years, end-of wet and dry seasons.

1.7 Base selection - LOSOM vs. Schedule

As stated earlier in the **Assumptions - Base Scenario** section, real-world (and SFWMM) water management of WCA-2A must consider water supply, flood control, and external-Everglades-basin needs in areas upstream and downstream. Thus, as shown in Figure 8, the ELM simulation of the LOSOM (ELM-LOSOM) Base frequently does not adhere to the Current Schedule for stage regulation in WCA-2A. Because the ELM water management can only evaluate conditions within the simulated WCA-2A basin, the ELM simulation that was driven by that regulation schedule (ELM-Sched) more closely adheres to those criteria (Figure 8).

Because our future Alternative scenarios do not consider conditions external to WCA-2A, it is clearly most appropriate to use a future Base simulation that does not consider conditions external to WCA-2A (i.e., **ELM-Sched is the Project's Base**). However, note that we used the SFWMM LOSOM stage output (at 2x2 mile grid scale) as WCA-2A domain periphery stage boundary conditions for all future Base and Scenario simulations (above **Input Data** section).

For general information, Figure 9 provides the annual water budget for the WCA-2A basin, simulated by the future ELM-Sched Base. These annual flow sums were calculated for: Inflows of rain, water control structure inflows, surface water inflows (all zero in this impounded basin), groundwater inflows, and levee seepage inflows; and Outflows of ET, water control structure outflows, surface water outflows (all zero in this impounded basin), groundwater outflows, and levee seepage outflows.

[1] ELM coding for map time series output requires use of julian-calendar map output dates, which gradually become offset from standard-calendar dates; judgments must be used to choose 30-d mean dates of interest relative to the standard-calendar (see Figure 7).

1.8 Results - Scenario evaluations -- examples

This section shows the **most informative examples** of the difference maps and difference graphs of the Performance Measures for ELM3wca2_100 results, allowing ***relative comparisons*** among the future Alternative scenarios. See **Appendix** for qualitative summary of **Difference Map** comparisons. The full set of Performance Measure results are available at:
https://www.ecolandmod.com/projects/ELM3wca2a#ResultsAlts.

Difference Map Figure caption, common to all:

Each variable's difference-mapset shows the color-scaled raster results, and vector contours of the area of marsh that exceeds selected ecologically-meaningful thresholds for the variable, and vector contours of the marsh area of the ecologically-meaningful (+/-) differences between the Base and Alternative for the variable. Simple tables in each map graphic show those area calculations.

*****See Table 1, Table 2, and Table 3** for definitions of the Scenarios, Performance Measures, and their temporal output definitions.

Map header-label syntax is in either 2 or 3 dot (".") separated parts, depending on whether it is a Period Of Simulation (POS) statistic:

2-part) **ScenarioName.VariableNameOutputDate** denotes the Scenario, and the Variable's daily mean over a 30-day bin ending on the OutputDate, or simply the Variable's calculated rate of change between the 52-year simulation's beginning and end (for rates of P accumulation and peat accretion).

3-part) **ScenarioName.VariableName.POSmean** denotes the Scenario, and the Variable's mean over the 52-yearr Period Of Simulation.

1.8.1 Difference Map results - NEberm subregion

As indicated in the **Introduction** (and other Project documents), our Project goals focus on improved water flows and depths in the (currently degraded) northeast region of WCA-2A. Towards that focus, this ***section quantifies the physical (hydrologic) responses*** to future Alternative scenarios in this dynamic subregion.

These NEberm subregion map results are simply a spatial-zoom of the (later section's) Basin-wide region results.

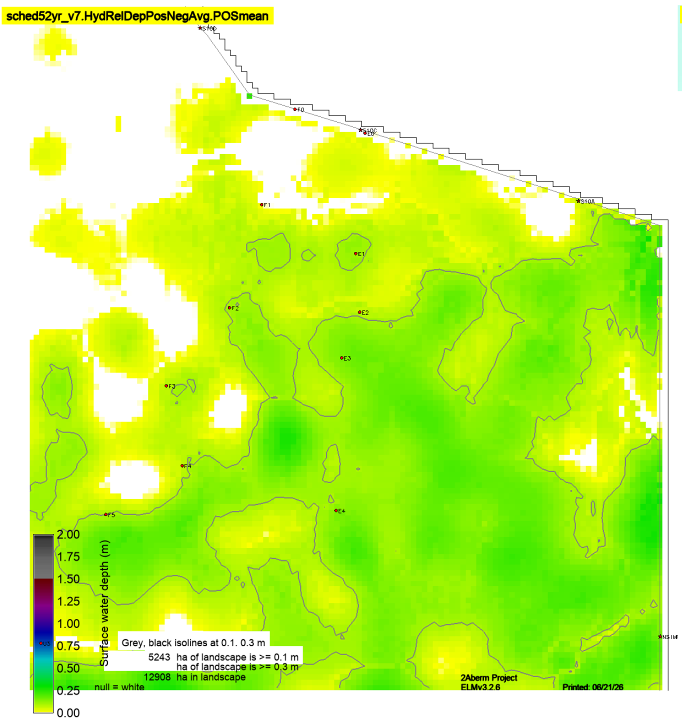
The primary purpose of creating this NEberm subregion zoom of spatial map Performance Measures is to **quantify the marsh area difference map results that include only this Northeast subregion**, where the most significant hydro-ecological responses to Alternative scenarios are expected (and indeed occurred).

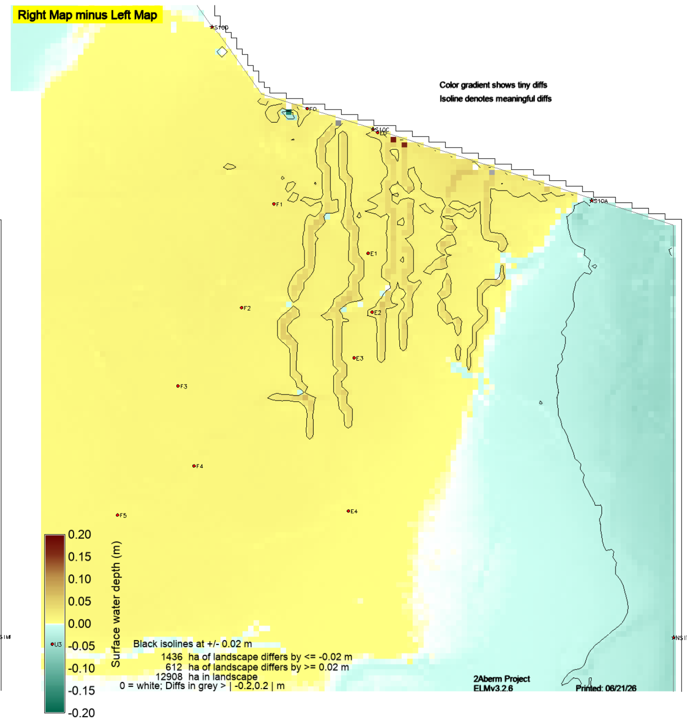
The marsh area of this NEberm subregion is ~30% that of the Basin-wide region.

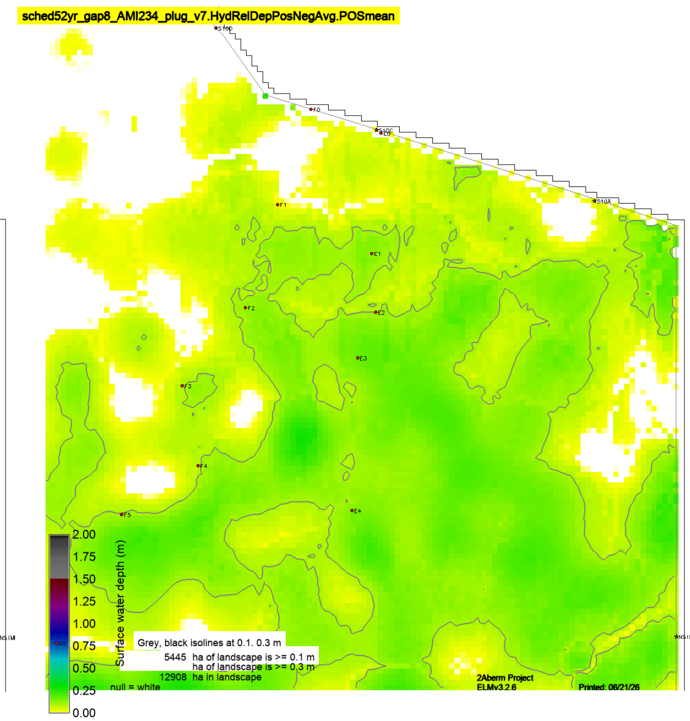
1.8.1.1 NEberm subregion: Hydrology, POS mean

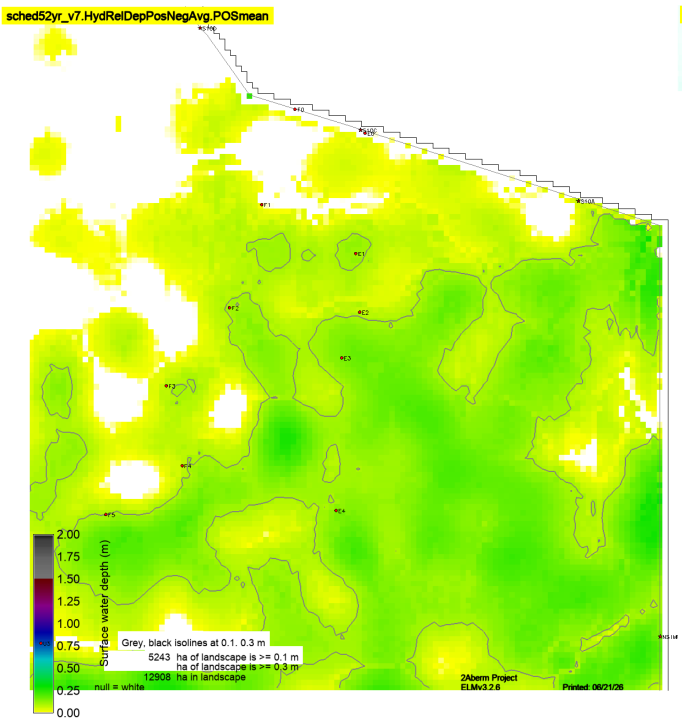
- ***3 Variables = Surface water depth[2], velocity, and chloride tracer*** - Following 15 Figure pages= Figure Map1, Map2, Map3 (5 scenario pages for each variable's Figure Map).
- Those 15 Map Figures are followed by 1-page summary bar graph "Figure sumMap1,2,3" of threshold marsh areas for all variables, all scenarios.
- Bullets below are **difference map "pattern judgment" summaries** of results in the below 15 Map Figures:
  - IMPORTANTLY, these POS mean evaluations are associated with the fact that **long-term mean values tend to average-out the effects of relatively brief seasonal periods of S10 inflows**.
  - At the POS time scale, velocity appears to be a somewhat more sensitive/useful variable than depth and chloride; chloride concentrations are more homogenous and less-influenced by depths.
  - Gaps: little/marginal NEberm subregion benefit seen via the 3 variables
  - Plug: meaningful NEberm subregion benefits seen via the 3 variables
  - Gaps&Plug: meaningful NEberm subregion benefits seen via the 3 variables; but few benefits beyond Plug-only
  - AMI&Gaps: meaningful NEberm subregion benefits seen via the 3 variables
    - meaningful NEberm subregion benefits seen via the 3 variables, but less than AMI&Gaps&Plug
    - meaningful slough-specific benefits seen via the depth and velocity variables, but less than AMI&Gaps&Plug
    - no slough-specific response via the chloride variable
  - AMI&Gaps&Plug: meaningful NEberm subregion benefits seen via the 3 variables
    - meaningful NEberm subregion benefits seen via the 3 variables, and more than AMI&Gaps
    - meaningful slough-specific benefits seen via the depth and velocity variables, and more than AMI&Gaps
    - no slough-specific response via the chloride variable

[2] The maps displaying surface water depth show ONLY positive values of the variable "**HydRelDepPosNeg**" (i.e., not their negative, below-ground depths). Their **difference maps (middle in fig) calculate ALL differences (above and below ground) and thus may display differences in absense of surface water in the left and/or right maps**.

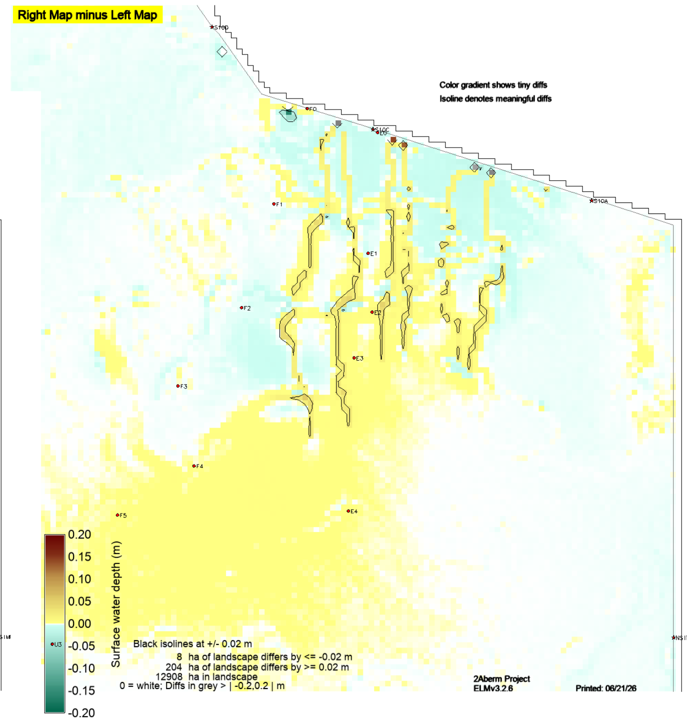

sched52yr_v7.HydRelDepPosNegAvg.POSmean
Surface water depth (m)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Grey, black isolines at 0.1. 0.3 m
5243 ha of landscape is >= 0.1 m
ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26


Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Surface water depth (m)
0.20
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.20
Black isolines at +/- 0.02 m
1436 ha of landscape differs by <= -0.02 m
612 ha of landscape differs by >= 0.02 m
12908 ha in landscape
0 = white; Diffs in grey > | -0.2,0.2 | m
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

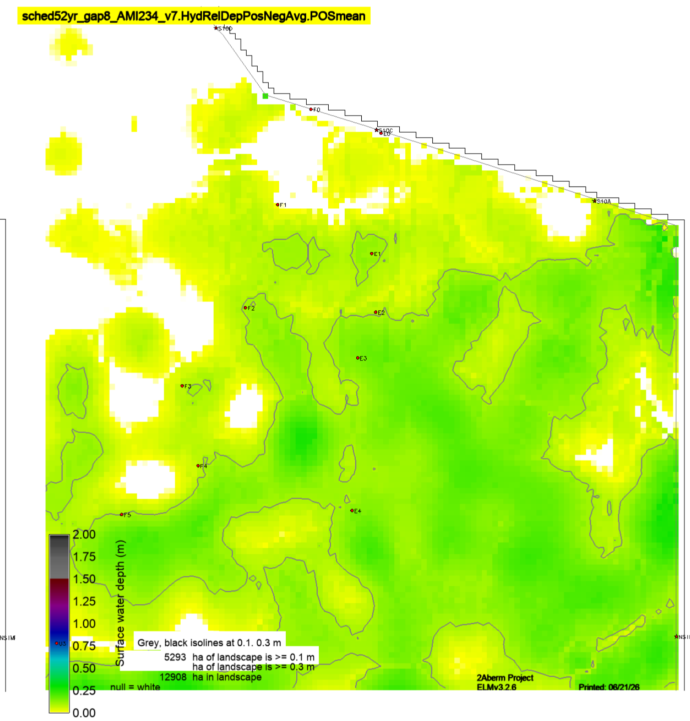

sched52yr_gap8_AMI234_plug_v7.HydRelDepPosNegAvg.POSmean
Surface water depth (m)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Grey, black isolines at 0.1. 0.3 m
5445 ha of landscape is >= 0.1 m
ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26



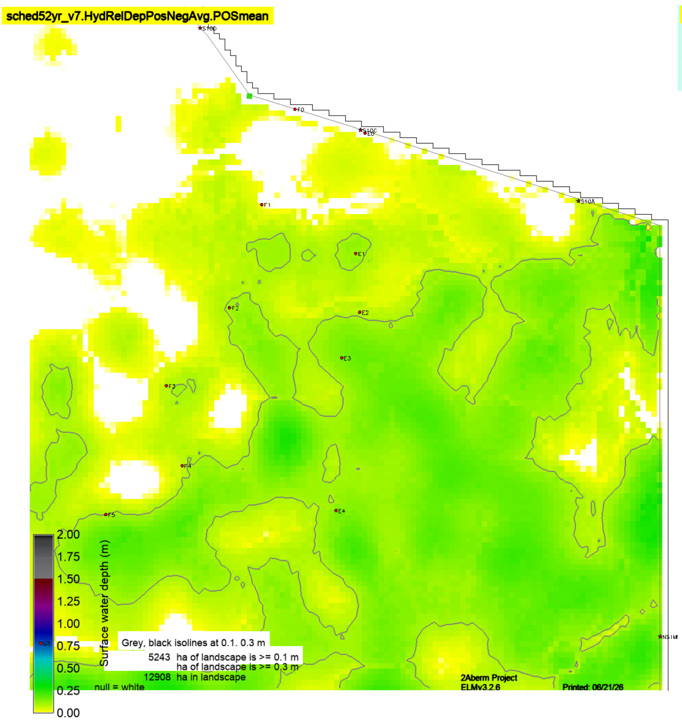
sched52yr_v7.HydRelDepPosNegAvg.POSmean
Surface water depth (m)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Grey, black isolines at 0.1, 0.3 m
5243 ha of landscape is >= 0.1 m
ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

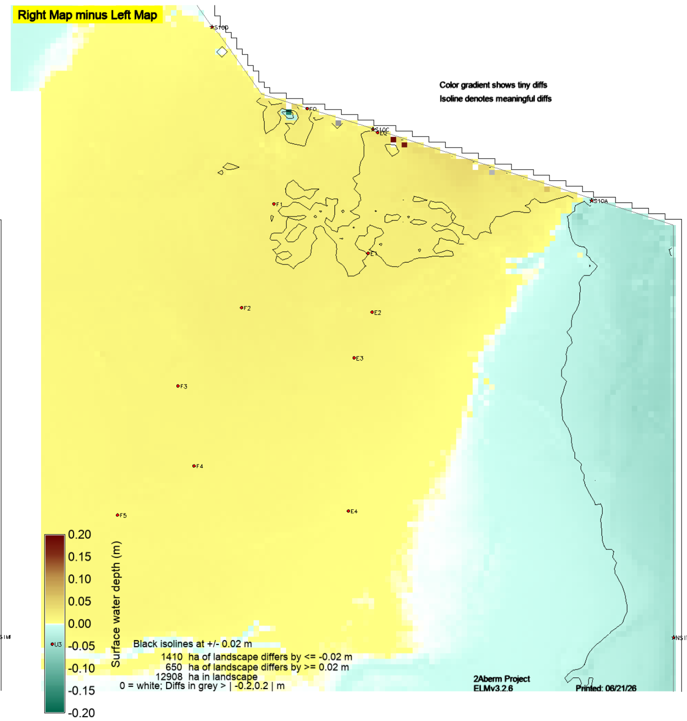


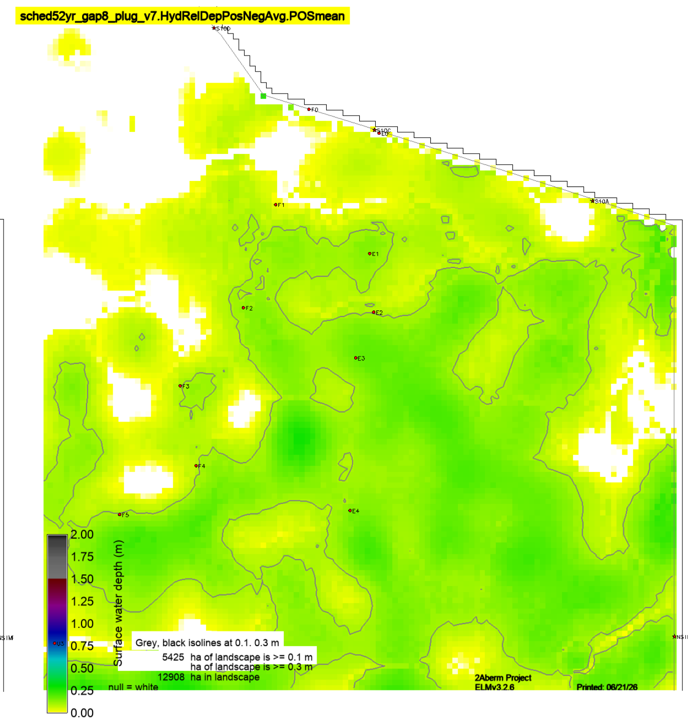
Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Surface water depth (m)
0.20
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.20
Black isolines at +/- 0.02 m
8 ha of landscape differs by <= -0.02 m
204 ha of landscape differs by >= 0.02 m
12908 ha in landscape
0 = white; Diffs in grey > | -0.2,0.2 | m
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

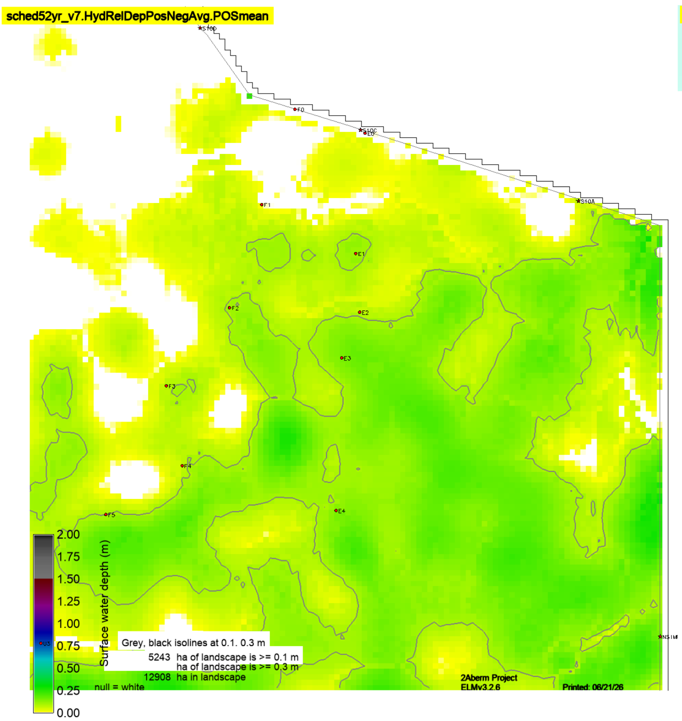


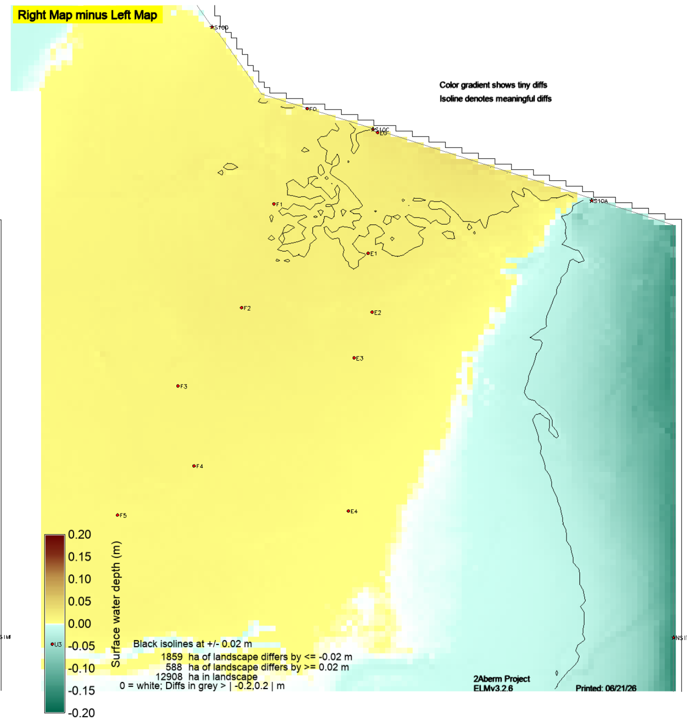
sched52yr_gap8_AMI234_v7.HydRelDepPosNegAvg.POSmean
Surface water depth (m)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Grey, black isolines at 0.1, 0.3 m
5293 ha of landscape is >= 0.1 m
ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

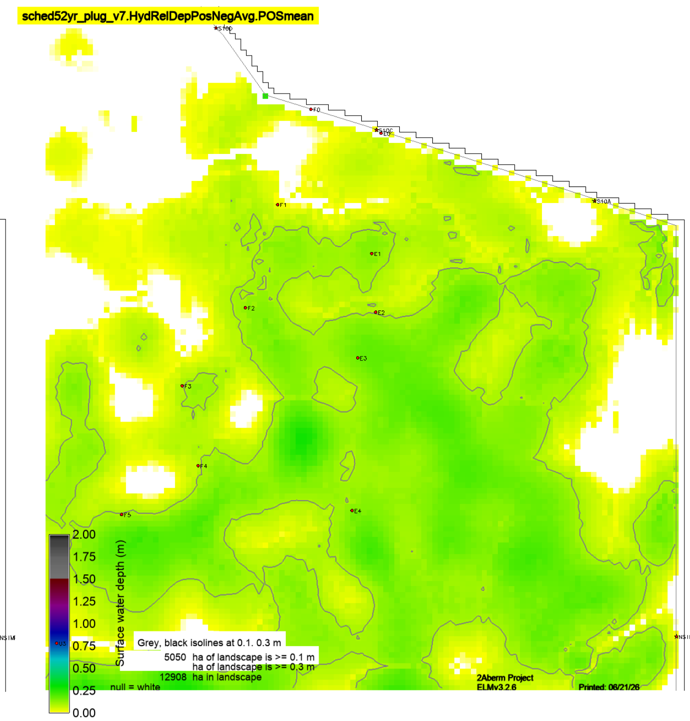

sched52yr_v7.HydRelDepPosNegAvg.POSmean
Surface water depth (m)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Grey, black isolines at 0.1. 0.3 m
5243 ha of landscape is >= 0.1 m
ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

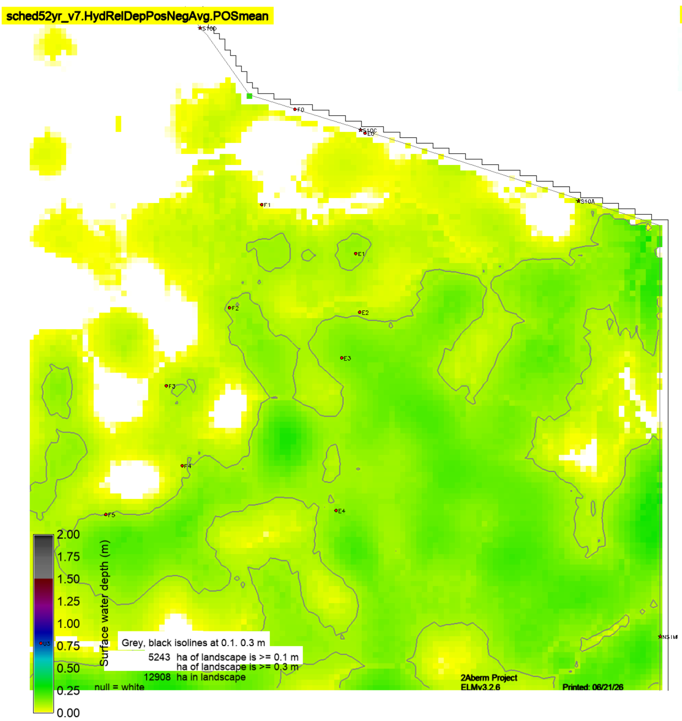

Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Surface water depth (m)
0.20
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.20
Black isolines at +/- 0.02 m
1410 ha of landscape differs by <= -0.02 m
650 ha of landscape differs by >= 0.02 m
12908 ha in landscape
0 = white; Diffs in grey > | -0.2,0.2 | m
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

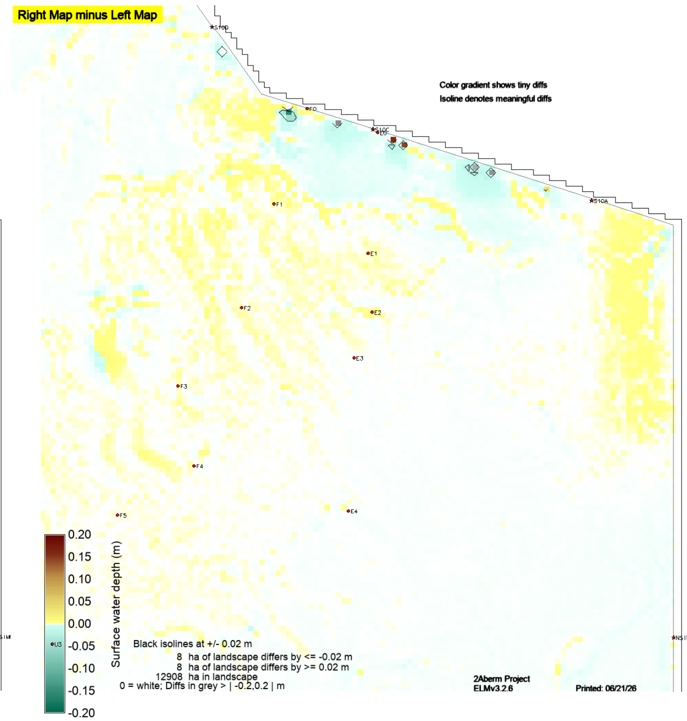

sched52yr_gap8_plug_v7.HydRelDepPosNegAvg.POSmean
Surface water depth (m)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Grey, black isolines at 0.1. 0.3 m
5425 ha of landscape is >= 0.1 m
ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

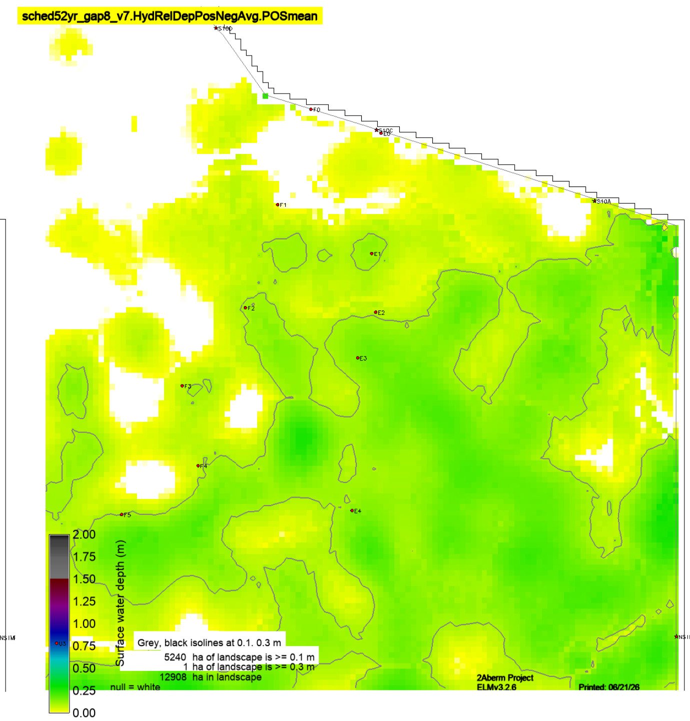

sched52yr_v7.HydRelDepPosNegAvg.POSmean
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Surface water depth (m)
Grey, black isolines at 0.1. 0.3 m
5243 ha of landscape is >= 0.1 m
ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

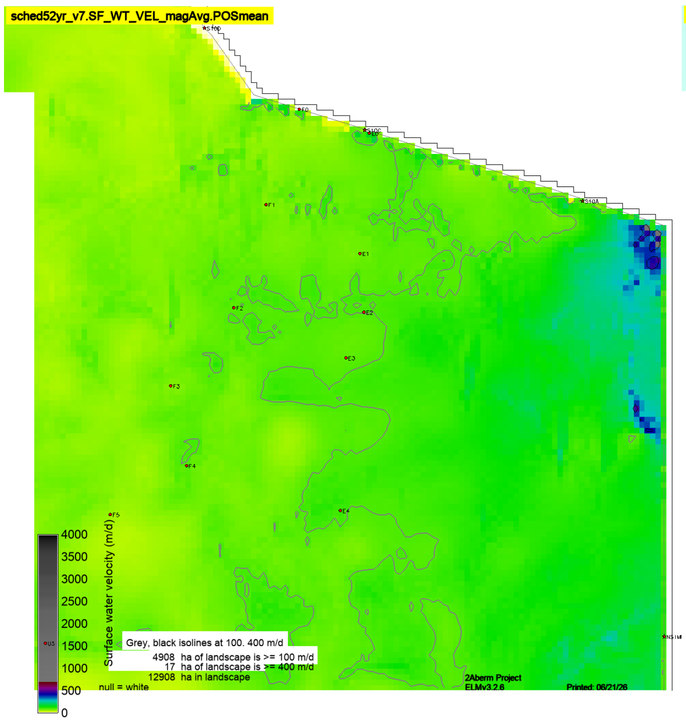

Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
0.20
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.20
Surface water depth (m)
Black isolines at +/- 0.02 m
1859 ha of landscape differs by <= -0.02 m
588 ha of landscape differs by >= 0.02 m
12908 ha in landscape
0 = white; Diffs in grey > | -0.2,0.2 | m
2Aberm Project
ELMv3.2.6
Printed: 06/21/26


sched52yr_plug_v7.HydRelDepPosNegAvg.POSmean
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Surface water depth (m)
Grey, black isolines at 0.1. 0.3 m
5050 ha of landscape is >= 0.1 m
ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

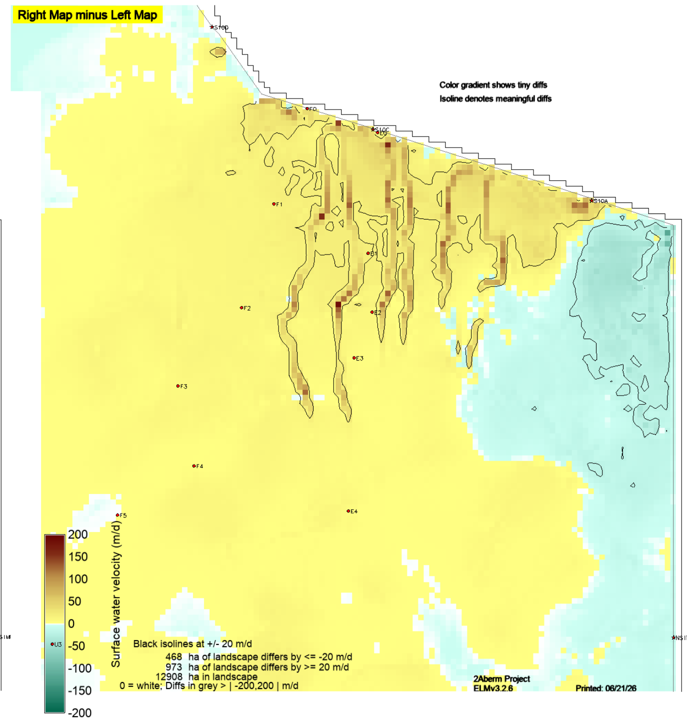

sched52yr_v7.HydRelDepPosNegAvg.POSmean
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Surface water depth (m)
Grey, black isolines at 0.1. 0.3 m
5243 ha of landscape is >= 0.1 m
ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26


Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
0.20
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.20
Surface water depth (m)
Black isolines at +/- 0.02 m
8 ha of landscape differs by <= -0.02 m
8 ha of landscape differs by >= 0.02 m
12908 ha in landscape
0 = white; Diffs in grey > | -0.2,0.2 | m
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

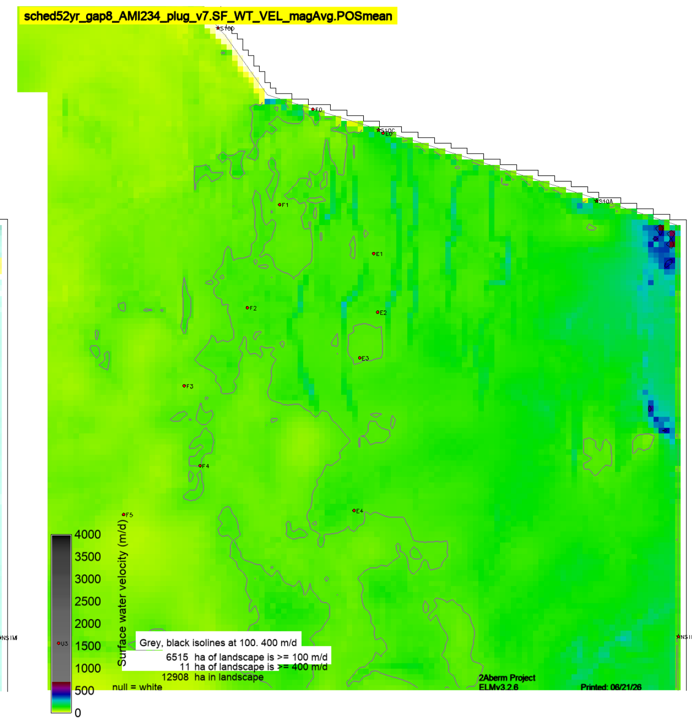

sched52yr_gap8_v7.HydRelDepPosNegAvg.POSmean
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Surface water depth (m)
Grey, black isolines at 0.1. 0.3 m
5240 ha of landscape is >= 0.1 m
1 ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26



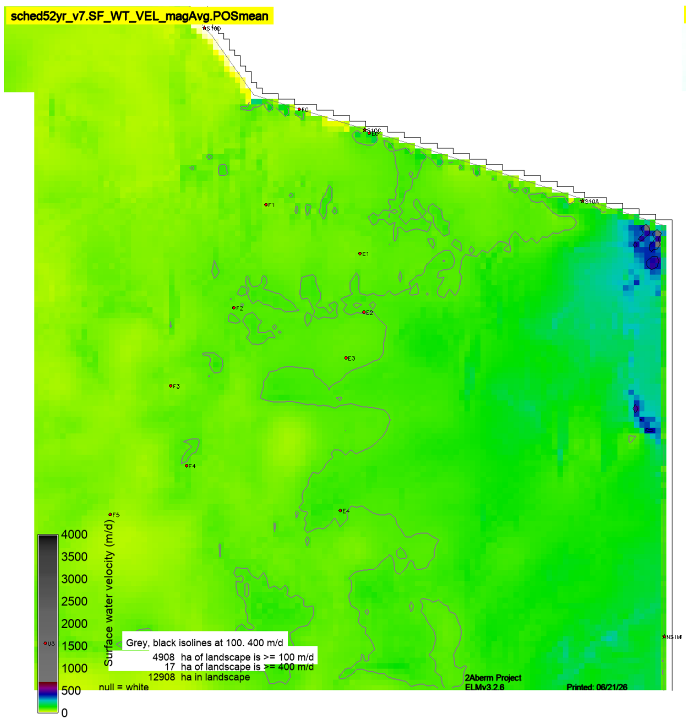
sched52yr_v7.SF_WT_VEL_magAvg.POSmean
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100. 400 m/d
4908 ha of landscape is >= 100 m/d
17 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

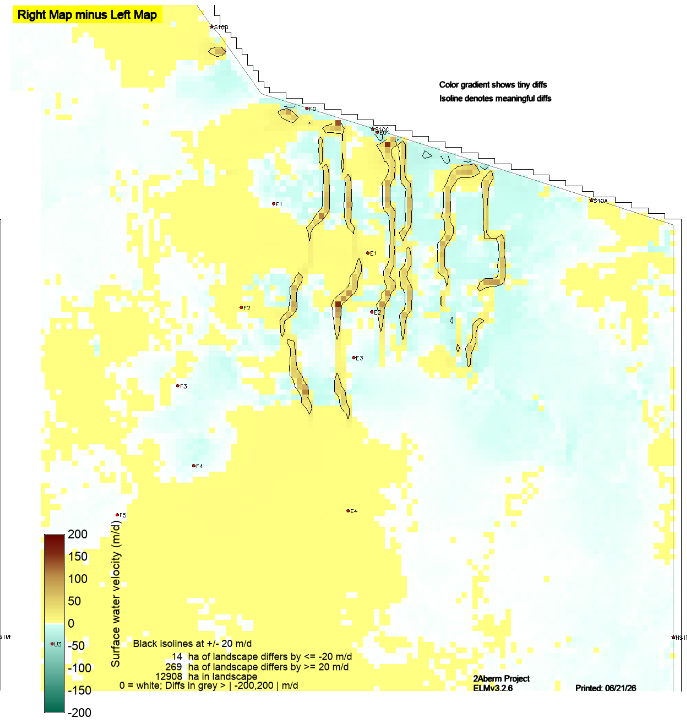


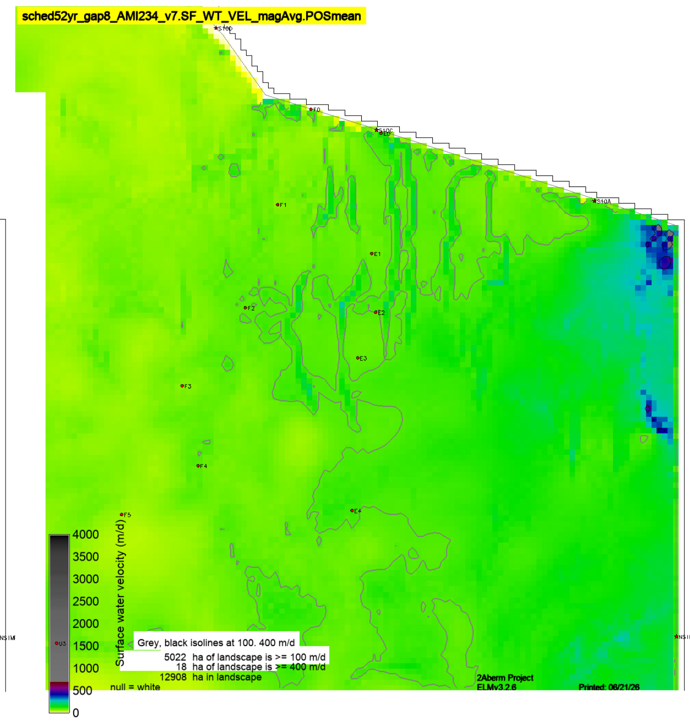
Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Surface water velocity (m/d)
200
150
100
50
0
-50
-100
-150
-200
Black isolines at +/- 20 m/d
468 ha of landscape differs by <= -20 m/d
973 ha of landscape differs by >= 20 m/d
12908 ha in landscape
0 = white; Diffs in grey > | -200,200 | m/d
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

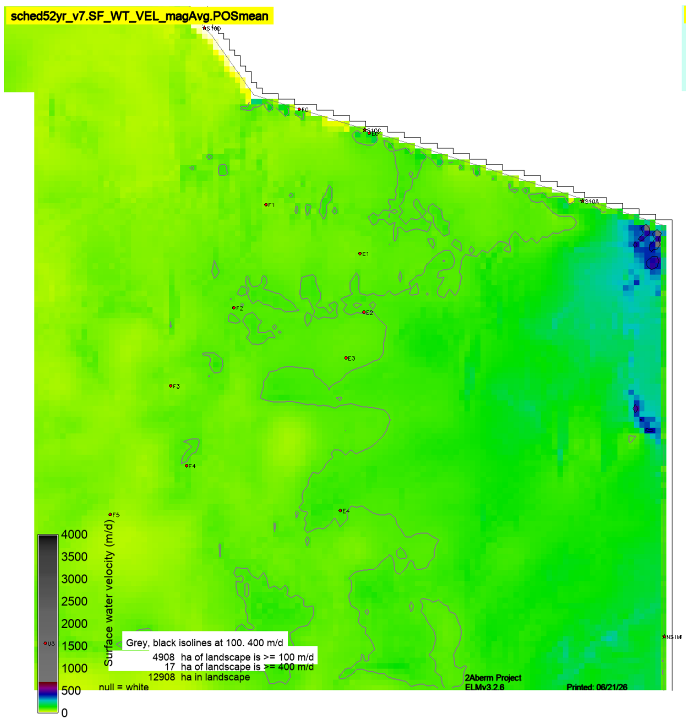


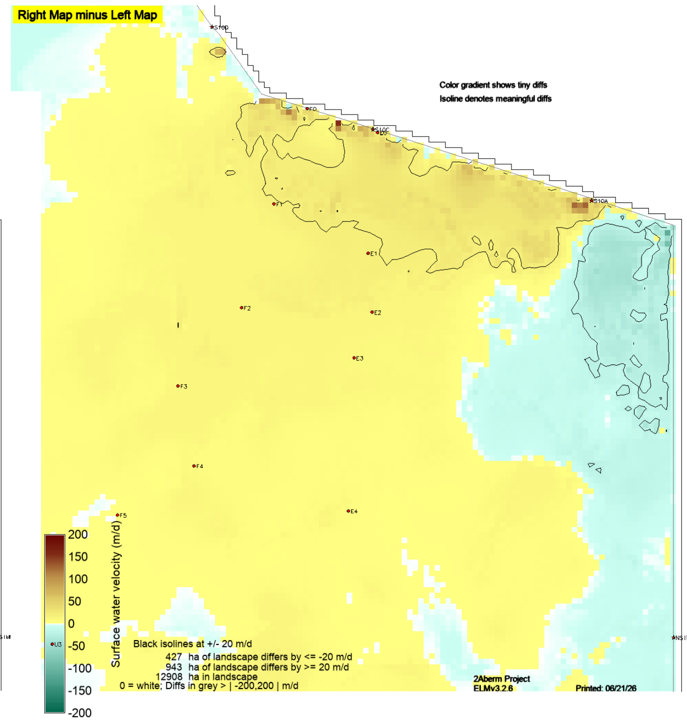
sched52yr_gap8_AMI234_plug_v7.SF_WT_VEL_magAvg.POSmean
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100. 400 m/d
6515 ha of landscape is >= 100 m/d
11 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

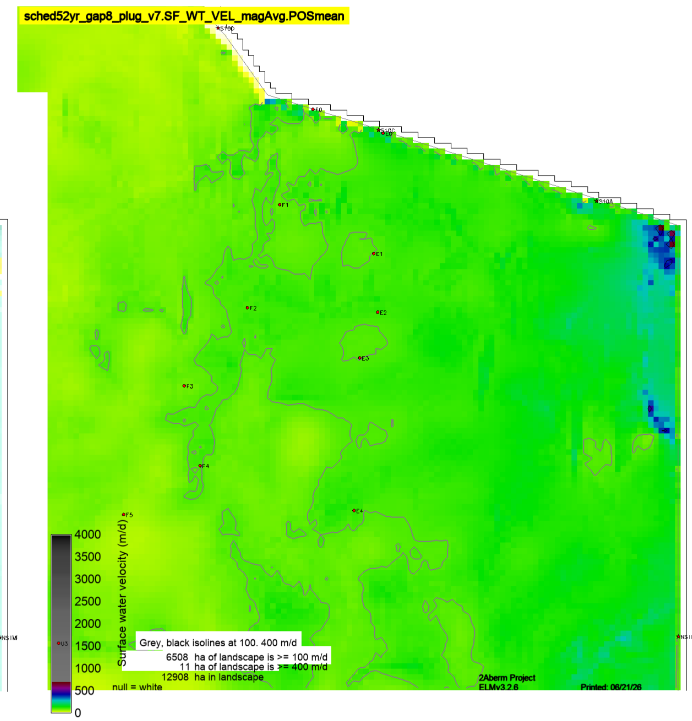

sched52yr_v7.SF_WT_VEL_magAvg.POSmean
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100. 400 m/d
4908 ha of landscape is >= 100 m/d
17 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

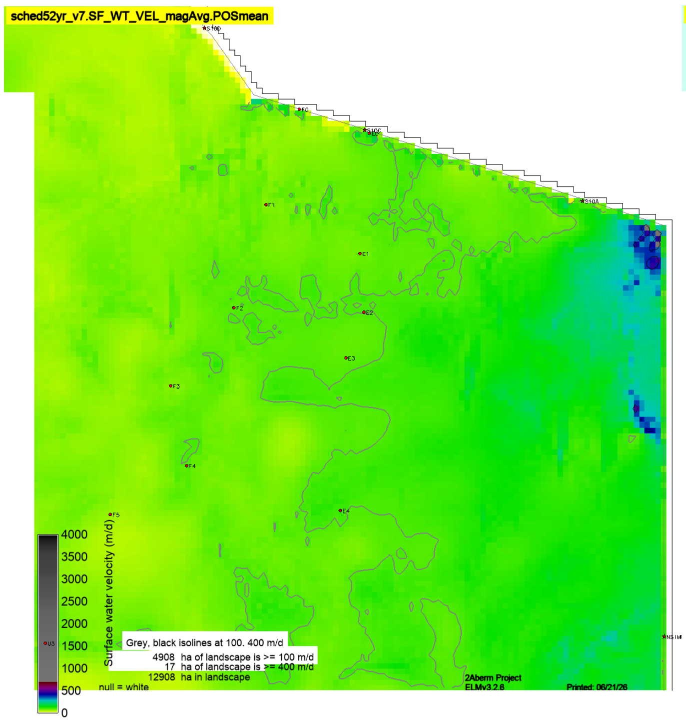

Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Surface water velocity (m/d)
200
150
100
50
0
-50
-100
-150
-200
Black isolines at +/- 20 m/d
14 ha of landscape differs by <= -20 m/d
269 ha of landscape differs by >= 20 m/d
12908 ha in landscape
0 = white; Diffs in grey > | -200,200 | m/d
2Aberm Project
ELMv3.2.6
Printed: 06/21/26


sched52yr_gap8_AMI234_v7.SF_WT_VEL_magAvg.POSmean
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100. 400 m/d
5022 ha of landscape is >= 100 m/d
18 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

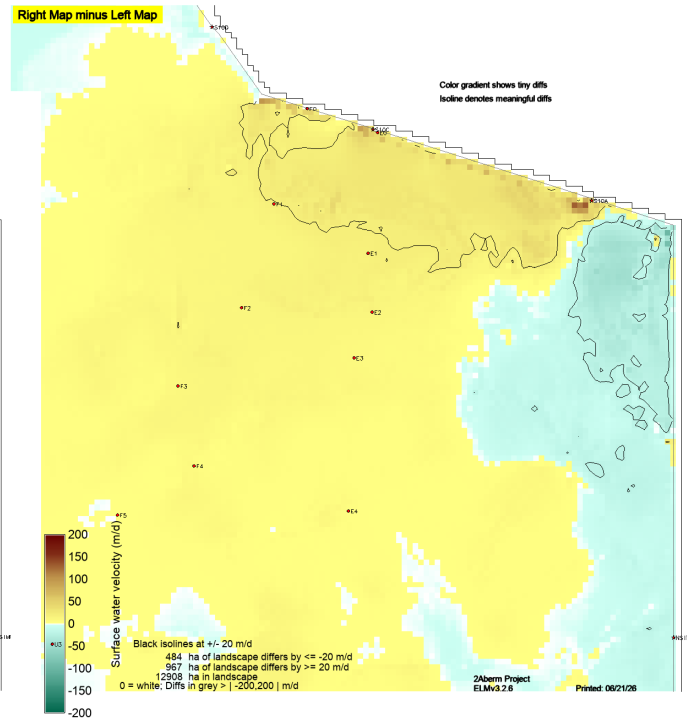

sched52yr_v7.SF_WT_VEL_magAvg.POSmean
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100. 400 m/d
4908 ha of landscape is >= 100 m/d
17 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26


Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Surface water velocity (m/d)
200
150
100
50
0
-50
-100
-150
-200
Black isolines at +/- 20 m/d
427 ha of landscape differs by <= -20 m/d
943 ha of landscape differs by >= 20 m/d
12908 ha in landscape
0 = white; Diffs in grey > | -200,200 | m/d
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

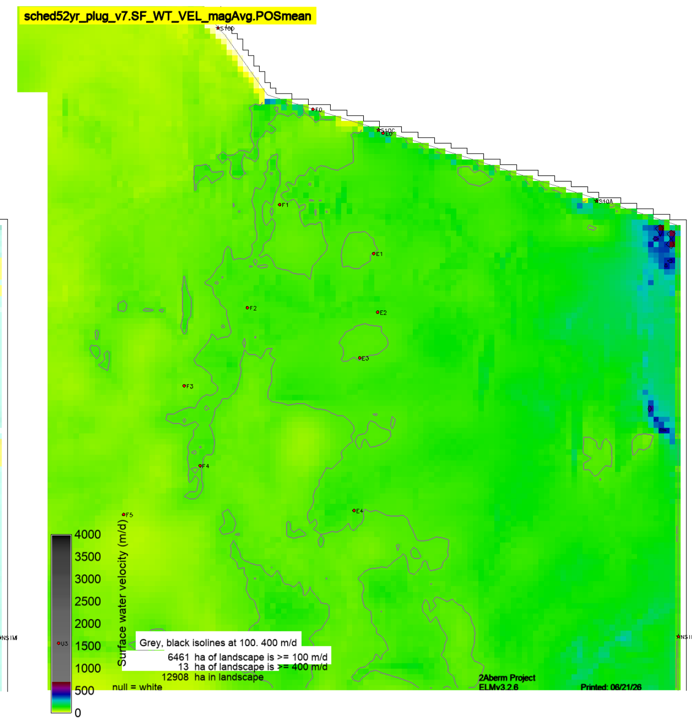

sched52yr_gap8_plug_v7.SF_WT_VEL_magAvg.POSmean
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100. 400 m/d
6508 ha of landscape is >= 100 m/d
11 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26



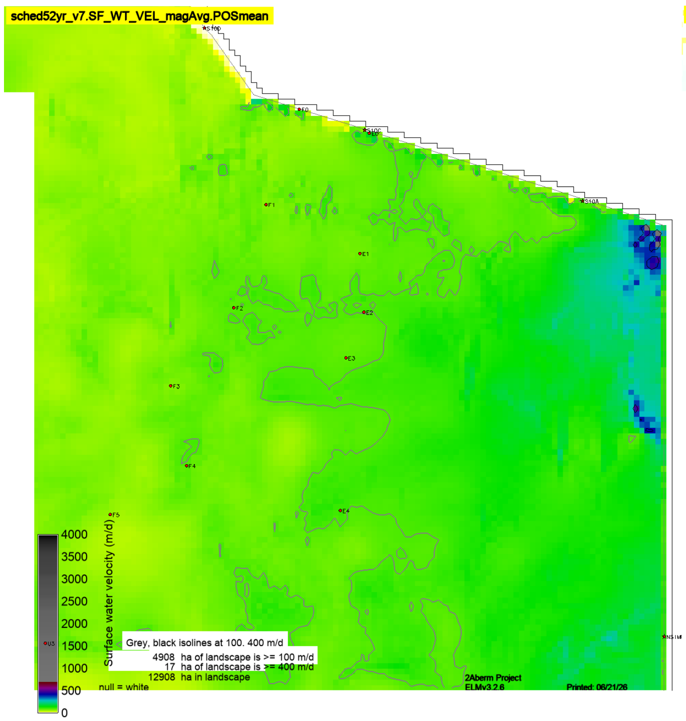
sched52yr_v7.SF_WT_VEL_magAvg.POSmean
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100, 400 m/d
4908 ha of landscape is >= 100 m/d
17 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26



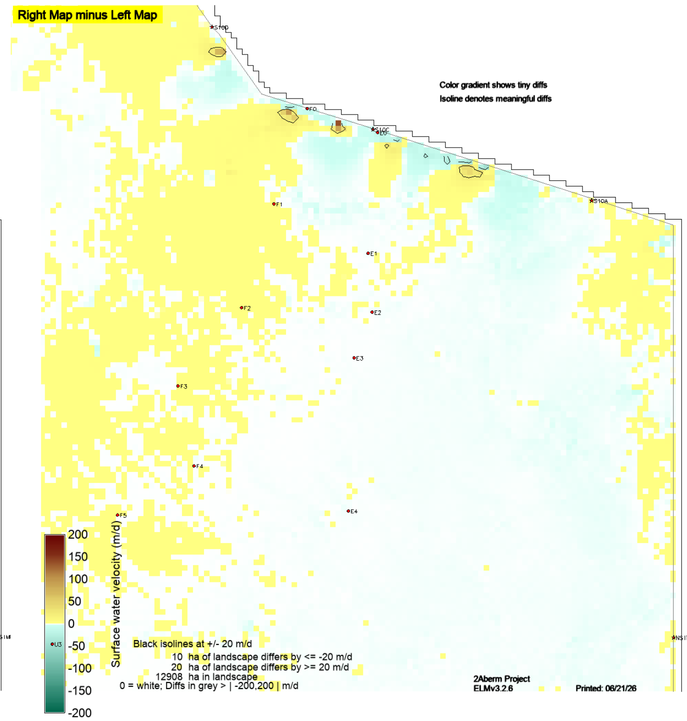
Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Surface water velocity (m/d)
200
150
100
50
0
-50
-100
-150
-200
Black isolines at +/- 20 m/d
484 ha of landscape differs by <= -20 m/d
967 ha of landscape differs by >= 20 m/d
12908 ha in landscape
0 = white; Diffs in grey > | -200,200 | m/d
2Aberm Project
ELMv3.2.6
Printed: 06/21/26



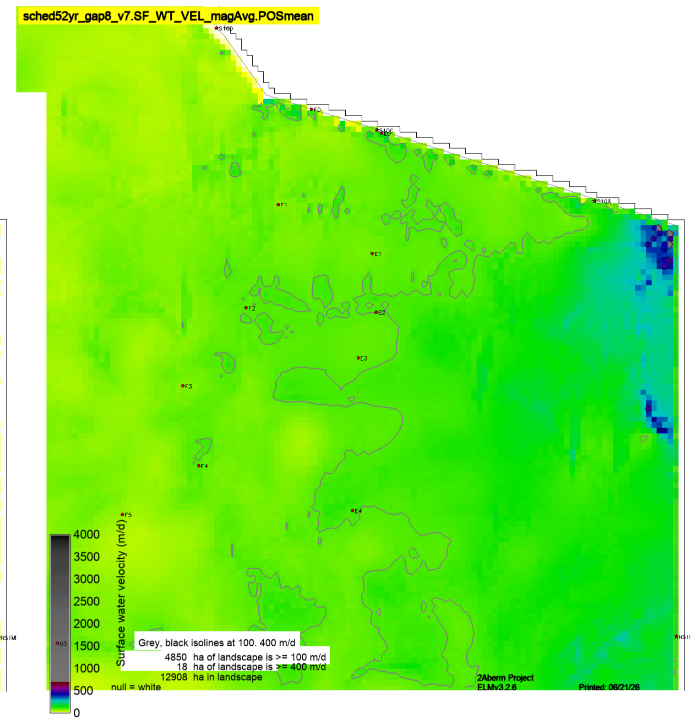
sched52yr_plug_v7.SF_WT_VEL_magAvg.POSmean
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100, 400 m/d
6461 ha of landscape is >= 100 m/d
13 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26



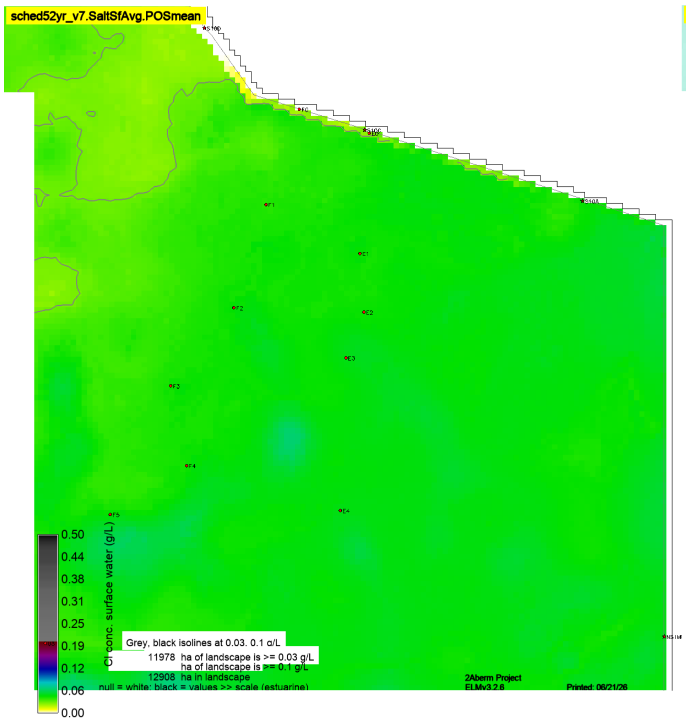
sched52yr_v7.SF_WT_VEL_magAvg.POSmean
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100, 400 m/d
4908 ha of landscape is >= 100 m/d
17 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

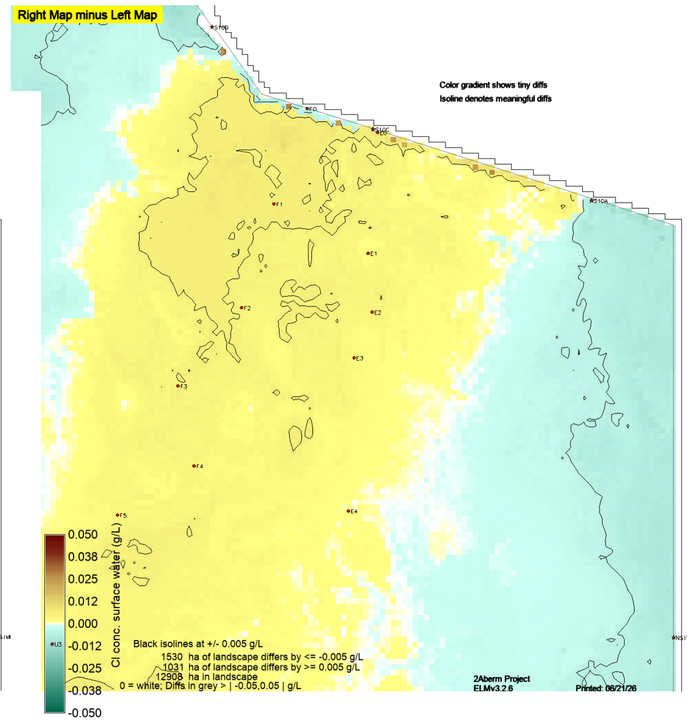


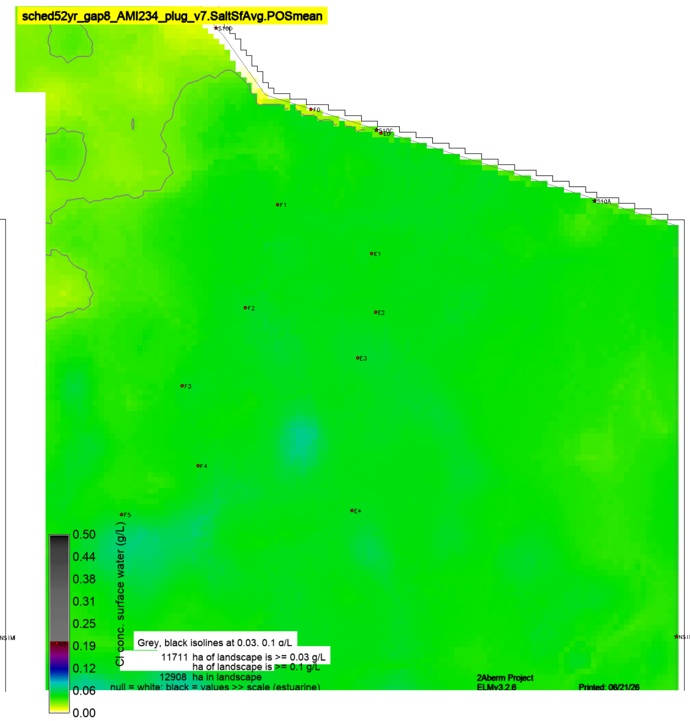
Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Surface water velocity (m/d)
200
150
100
50
0
-50
-100
-150
-200
Black isolines at +/- 20 m/d
10 ha of landscape differs by <= -20 m/d
20 ha of landscape differs by >= 20 m/d
12908 ha in landscape
0 = white; Diffs in grey > | -200,200 | m/d
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

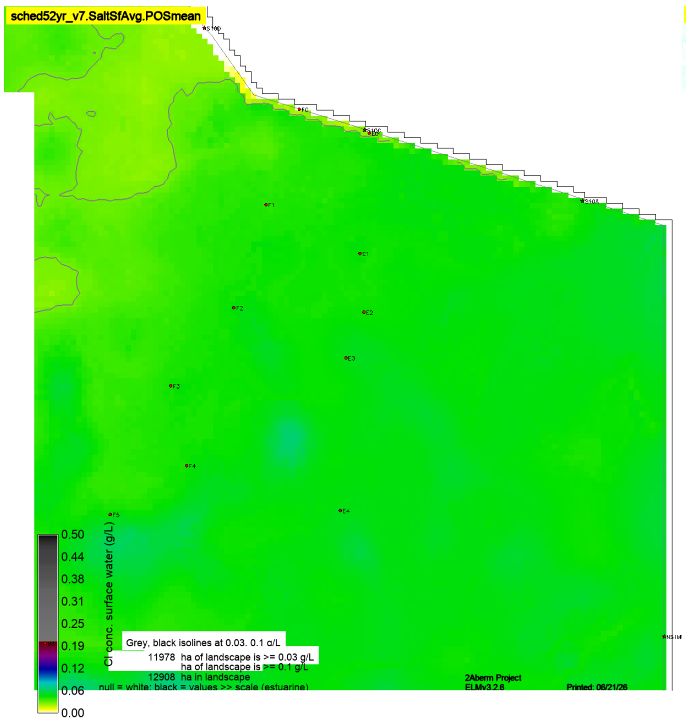


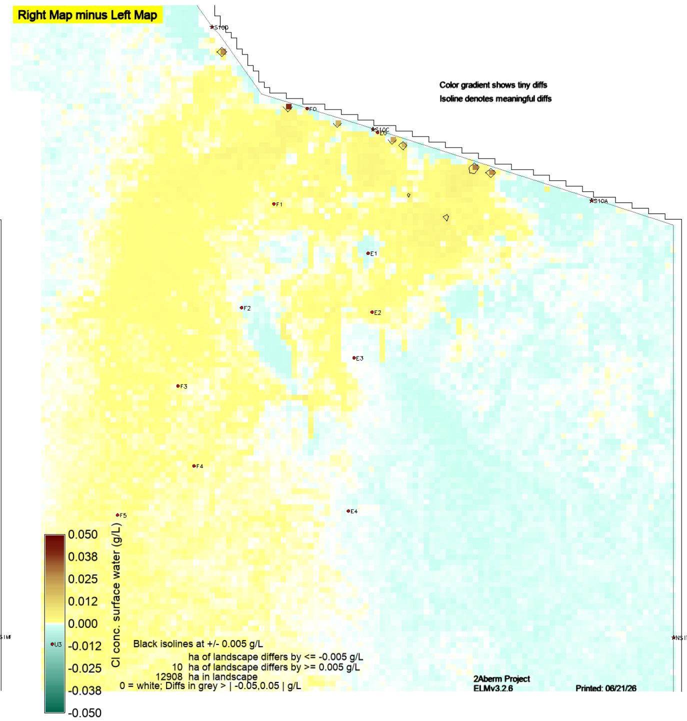
sched52yr_gap8_v7.SF_WT_VEL_magAvg.POSmean
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100, 400 m/d
4850 ha of landscape is >= 100 m/d
18 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

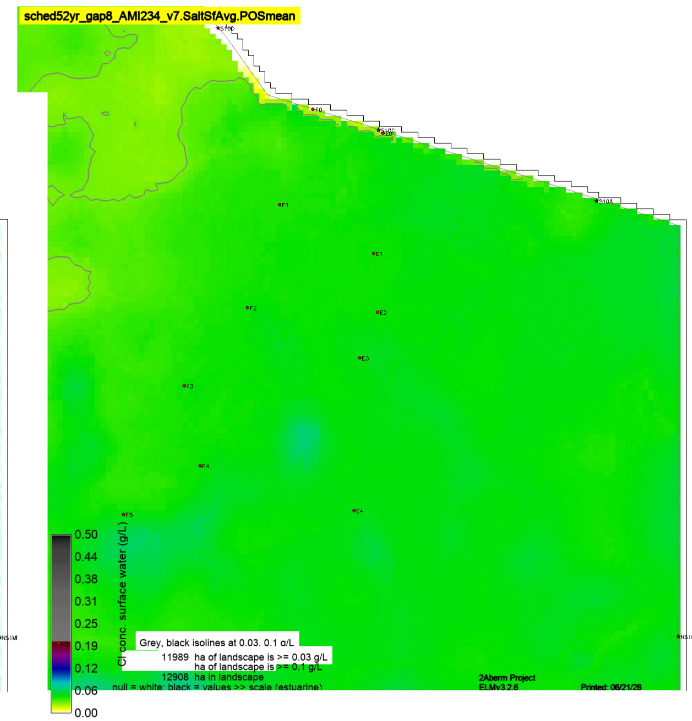

sched52yr_v7.SaltSfAvg.POSmean
Cl conc. surface water (g/L)
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Grey, black isolines at 0.03. 0.1 g/L
11978 ha of landscape is >= 0.03 g/L
ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white: black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

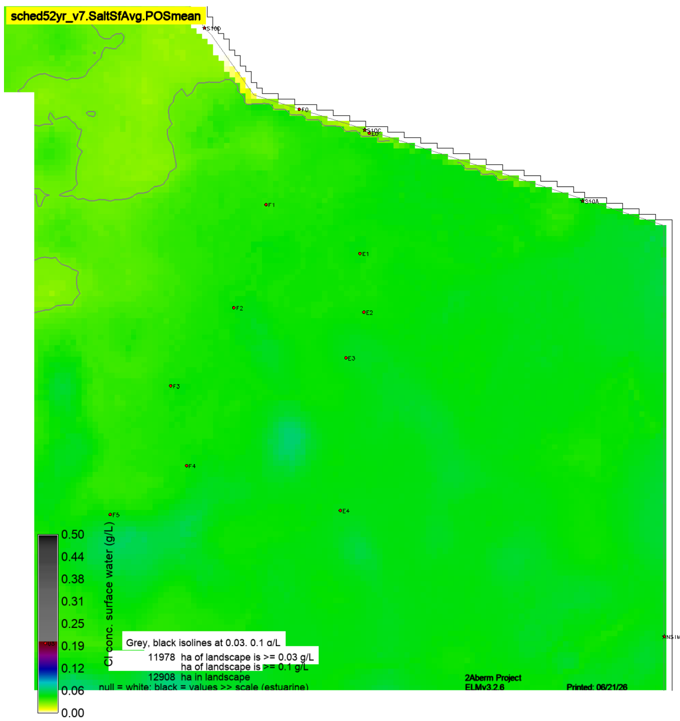

Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Cl conc. surface water (g/L)
0.050
0.038
0.025
0.012
0.000
-0.012
-0.025
-0.038
-0.050
Black isolines at +/- 0.005 g/L
1530 ha of landscape differs by <= -0.005 g/L
1031 ha of landscape differs by >= 0.005 g/L
12908 ha in landscape
0 = white; Diffs in grey > | -0.05,0.05 | g/L
2Aberm Project
ELMv3.2.6
Printed: 06/21/26


sched52yr_gap8_AMI234_plug_v7.SaltSfAvg.POSmean
Cl conc. surface water (g/L)
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Grey, black isolines at 0.03. 0.1 g/L
11711 ha of landscape is >= 0.03 g/L
ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white: black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

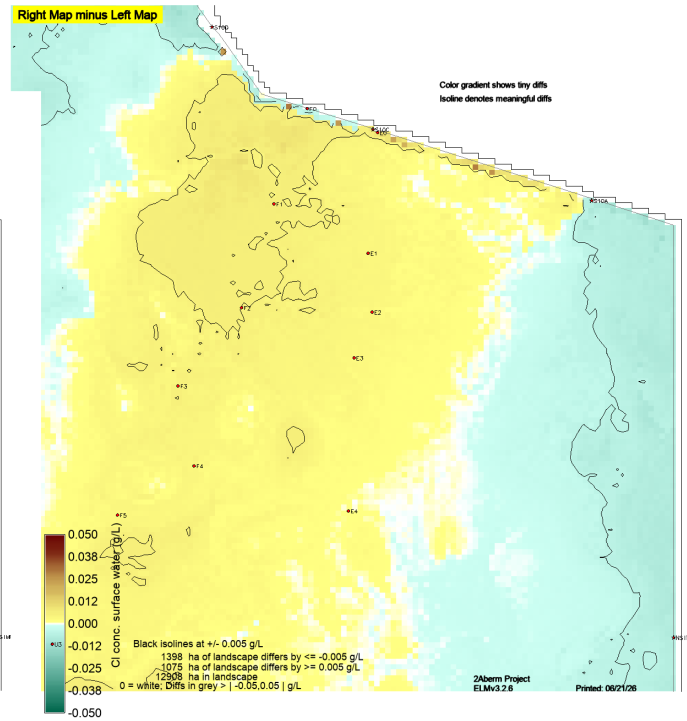

sched52yr_v7.SaltSfAvg.POSmean
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Cl conc. surface water (g/L)
Grey, black isolines at 0.03. 0.1 g/L
11978 ha of landscape is >= 0.03 g/L
ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white; black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26


Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
0.050
0.038
0.025
0.012
0.000
-0.012
-0.025
-0.038
-0.050
Cl conc. surface water (g/L)
Black isolines at +/- 0.005 g/L
ha of landscape differs by <= -0.005 g/L
10 ha of landscape differs by >= 0.005 g/L
12908 ha in landscape
0 = white; Diffs in grey > | -0.05,0.05 | g/L
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

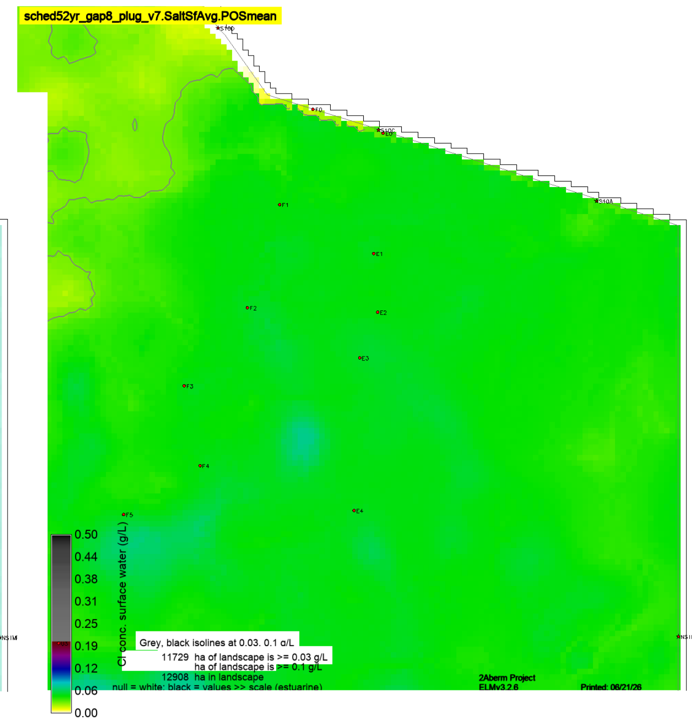

sched52yr_gap8_AMI234_v7.SaltSfAvg.POSmean
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Cl conc. surface water (g/L)
Grey, black isolines at 0.03. 0.1 g/L
11989 ha of landscape is >= 0.03 g/L
ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white; black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26



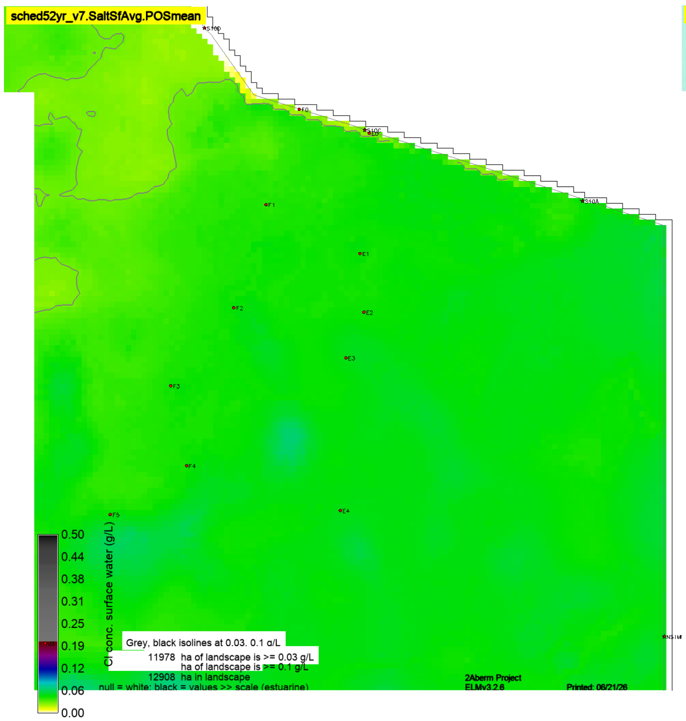
sched52yr_v7.SaltSfAvg.POSmean
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Cl conc. surface water (g/L)
Grey, black isolines at 0.03, 0.1 g/L
11978 ha of landscape is >= 0.03 g/L
ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white; black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26



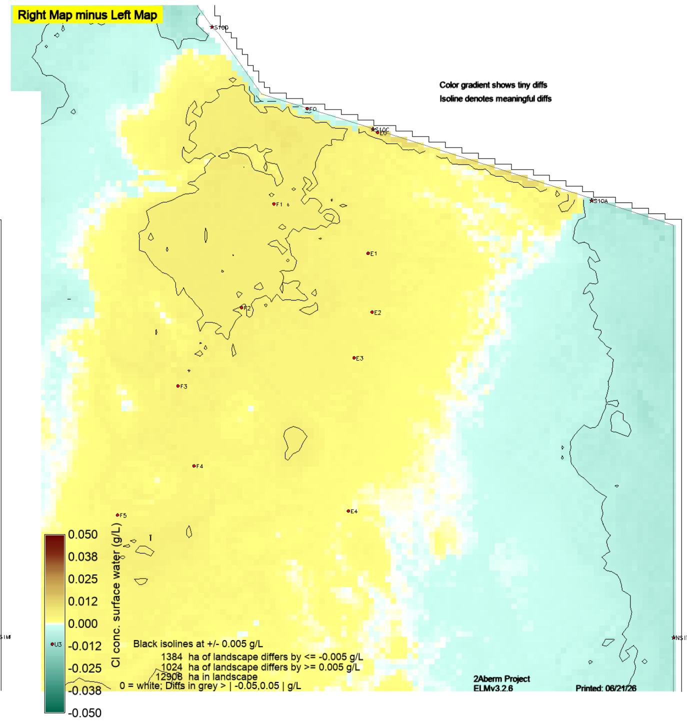
Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
0.050
0.038
0.025
0.012
0.000
-0.012
-0.025
-0.038
-0.050
Cl conc. surface water (g/L)
Black isolines at +/- 0.005 g/L
1398 ha of landscape differs by <= -0.005 g/L
1075 ha of landscape differs by >= 0.005 g/L
12908 ha in landscape
0 = white; Diffs in grey > | -0.05,0.05 | g/L
2Aberm Project
ELMv3.2.6
Printed: 06/21/26



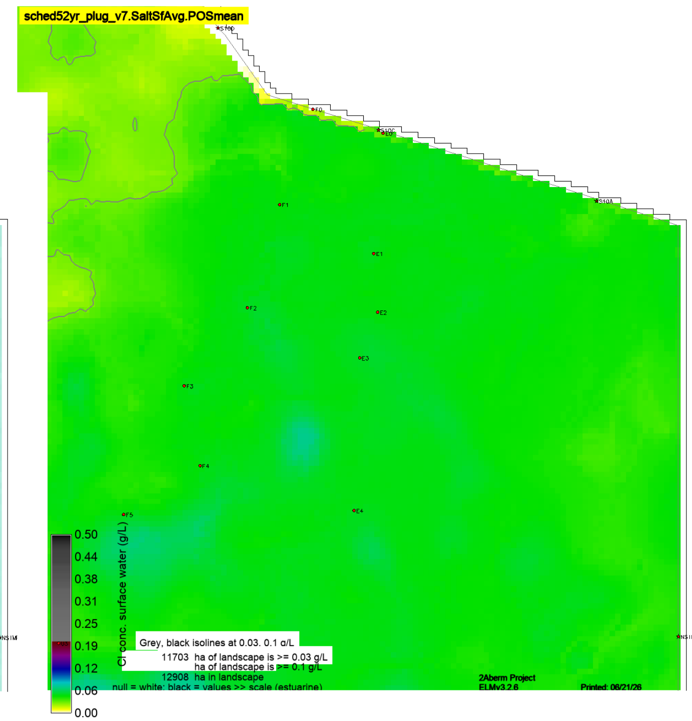
sched52yr_gap8_plug_v7.SaltSfAvg.POSmean
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Cl conc. surface water (g/L)
Grey, black isolines at 0.03, 0.1 g/L
11729 ha of landscape is >= 0.03 g/L
ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white; black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26



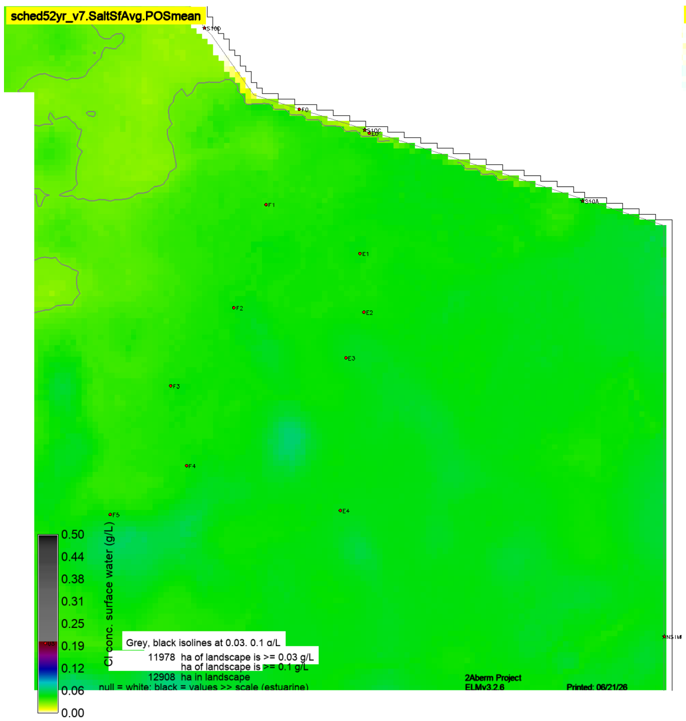
sched52yr_v7.SaltSfAvg.POSmean
S10D
F0
S10C
S10B
S10A
F1
E1
F2
E2
E3
F3
F4
F5
E4
NS1M
U3
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Cl conc. surface water (g/L)
Grey, black isolines at 0.03. 0.1 g/L
11978 ha of landscape is >= 0.03 g/L
ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white; black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

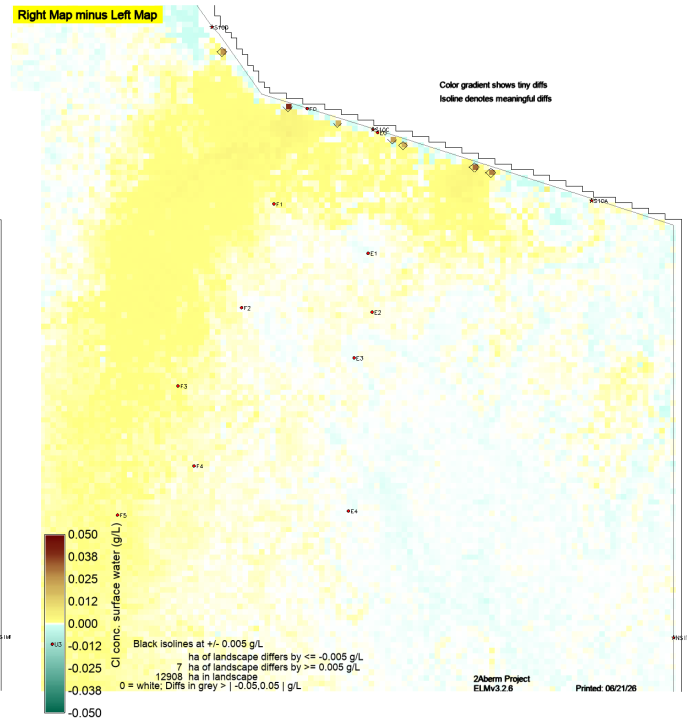


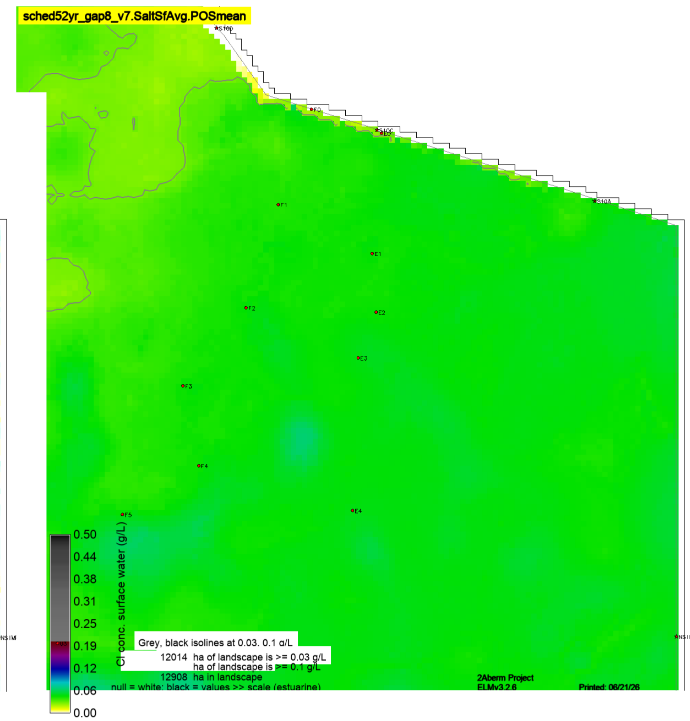
Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
S10D
F0
S10C
S10B
S10A
F1
E1
F2
E2
E3
F3
F4
F5
E4
NS1M
U3
0.050
0.038
0.025
0.012
0.000
-0.012
-0.025
-0.038
-0.050
Cl conc. surface water (g/L)
Black isolines at +/- 0.005 g/L
1384 ha of landscape differs by <= -0.005 g/L
1024 ha of landscape differs by >= 0.005 g/L
12908 ha in landscape
0 = white; Diffs in grey > | -0.05,0.05 | g/L
2Aberm Project
ELMv3.2.6
Printed: 06/21/26



sched52yr_plug_v7.SaltSfAvg.POSmean
S10D
F0
S10C
S10B
S10A
F1
E1
F2
E2
E3
F3
F4
F5
E4
NS1M
U3
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Cl conc. surface water (g/L)
Grey, black isolines at 0.03. 0.1 g/L
11703 ha of landscape is >= 0.03 g/L
ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white; black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26


sched52yr_v7.SaltSfAvg.POSmean
S10D
F0
S10C
S10B
S10A
F1
E1
F2
E2
E3
F3
F4
F5
E4
NS1MF
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Cl conc. surface water (g/L)
Grey, black isolines at 0.03. 0.1 g/L
11978 ha of landscape is >= 0.03 g/L
ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white; black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26


Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
S10D
F0
S10C
S10A
F1
E1
F2
E2
E3
F3
F4
F5
E4
NS1MF
0.050
0.038
0.025
0.012
0.000
-0.012
-0.025
-0.038
-0.050
Cl conc. surface water (g/L)
Black isolines at +/- 0.005 g/L
ha of landscape differs by <= -0.005 g/L
7 ha of landscape differs by >= 0.005 g/L
12908 ha in landscape
0 = white; Diffs in grey > | -0.05,0.05 | g/L
2Aberm Project
ELMv3.2.6
Printed: 06/21/26


sched52yr_gap8_v7.SaltSfAvg.POSmean
S10D
F0
S10C
S10A
F1
E1
F2
E2
E3
F3
F4
F5
E4
NS1MF
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Cl conc. surface water (g/L)
Grey, black isolines at 0.03. 0.1 g/L
12014 ha of landscape is >= 0.03 g/L
ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white; black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

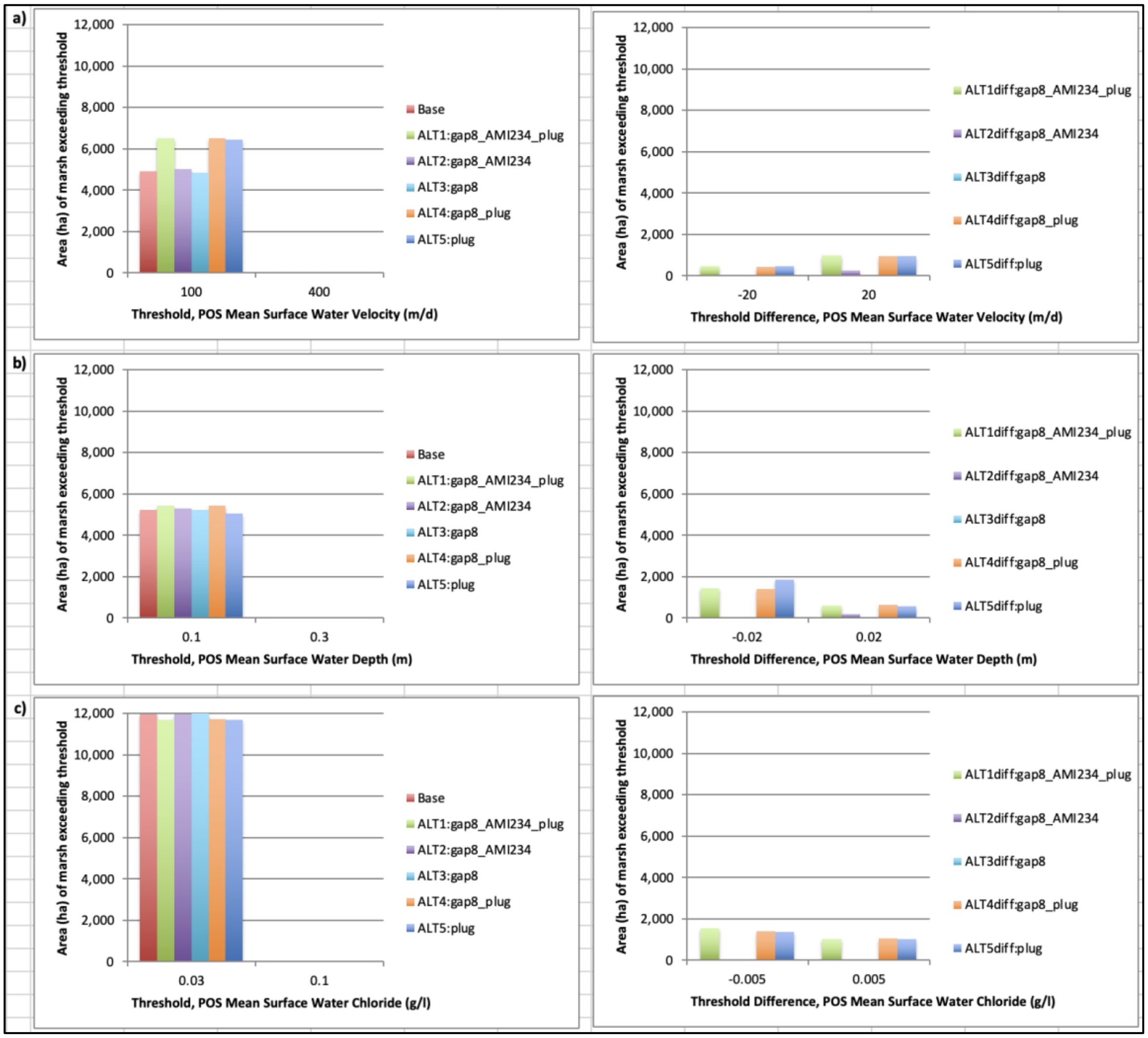
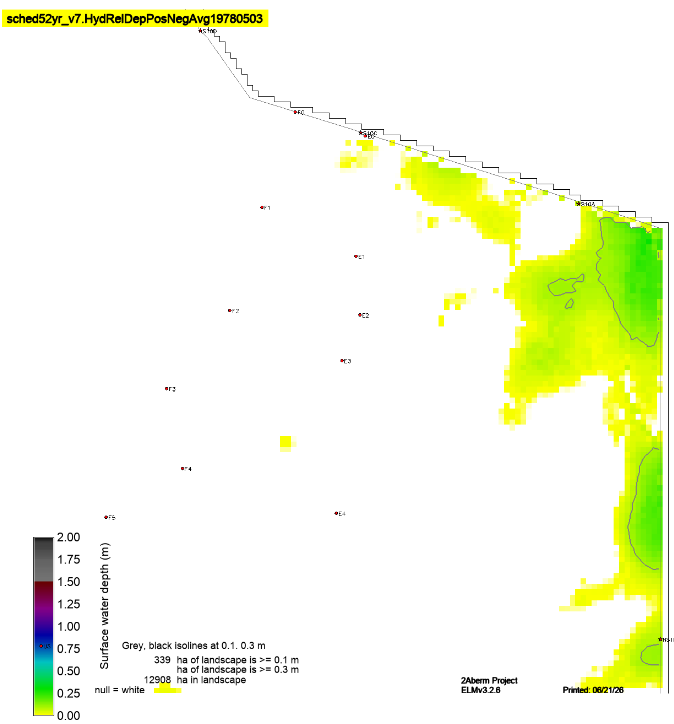
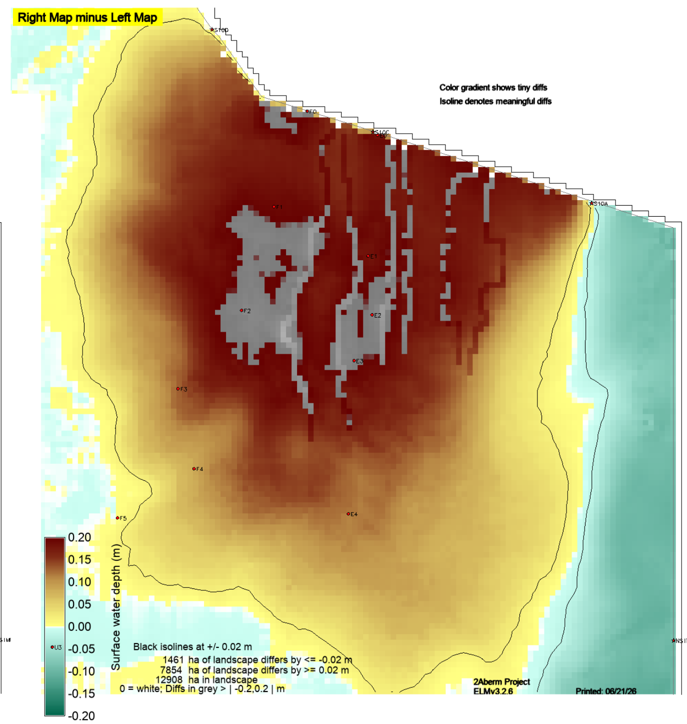
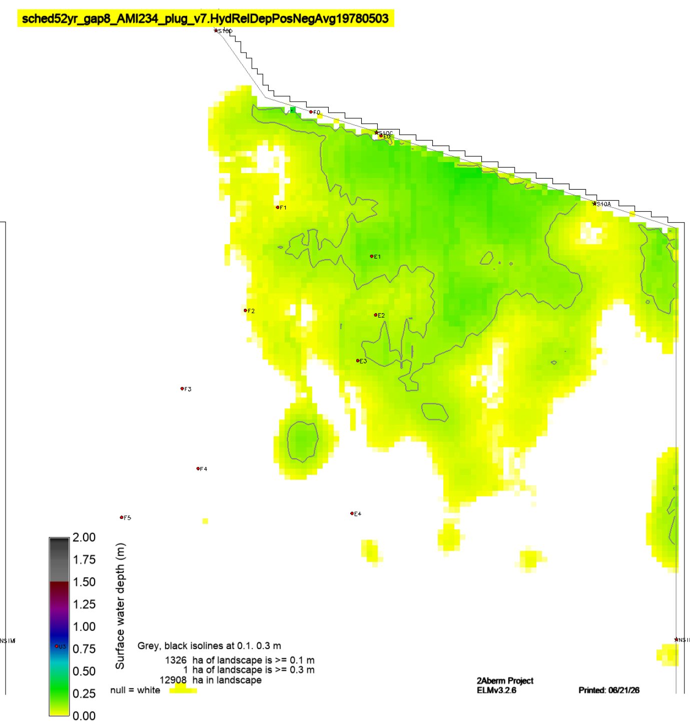


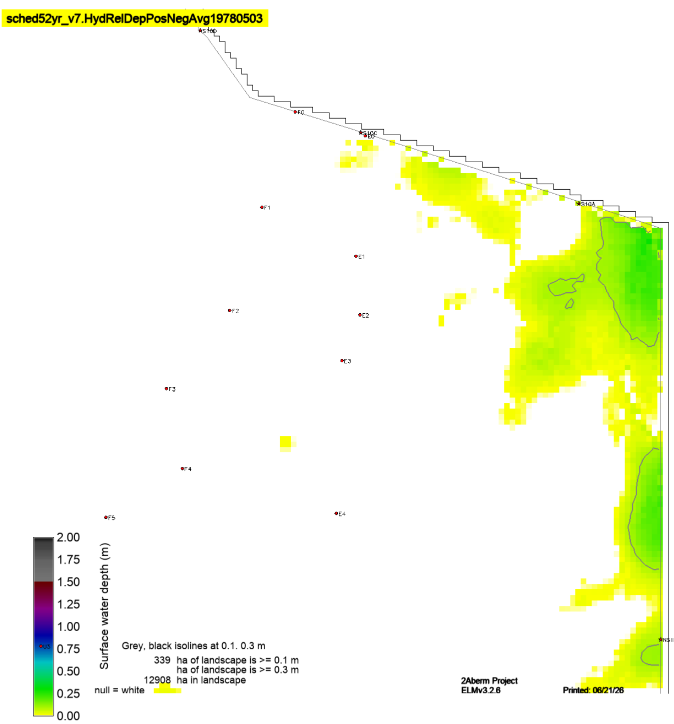
Figure sumMap1,2,3. NE berm subregion comparative bar graphs of contoured marsh areas shown in the above **POS mean** mapsets - for the a) velocity, b) depth, and c) chloride variables, all Base & Alternative scenarios.

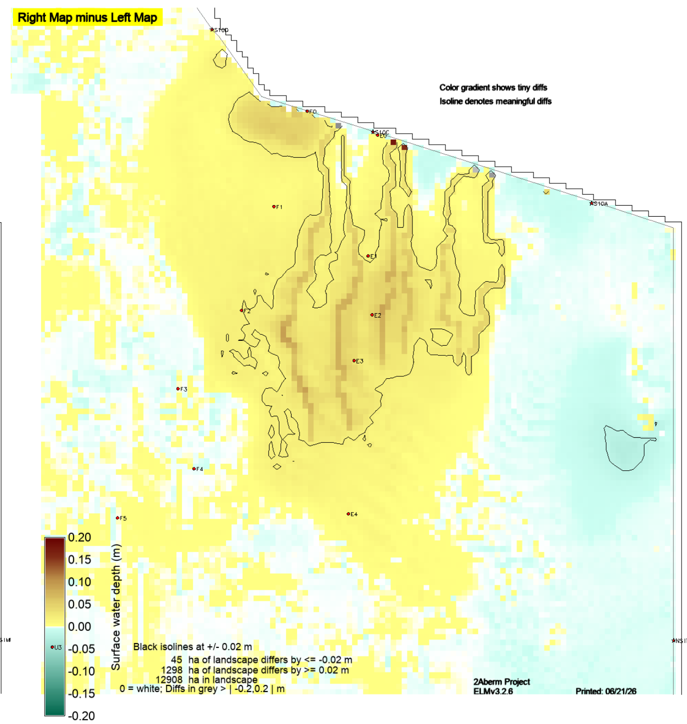
1.8.1.2 NEberm subregion: Hydrology, High-flow year, dry season

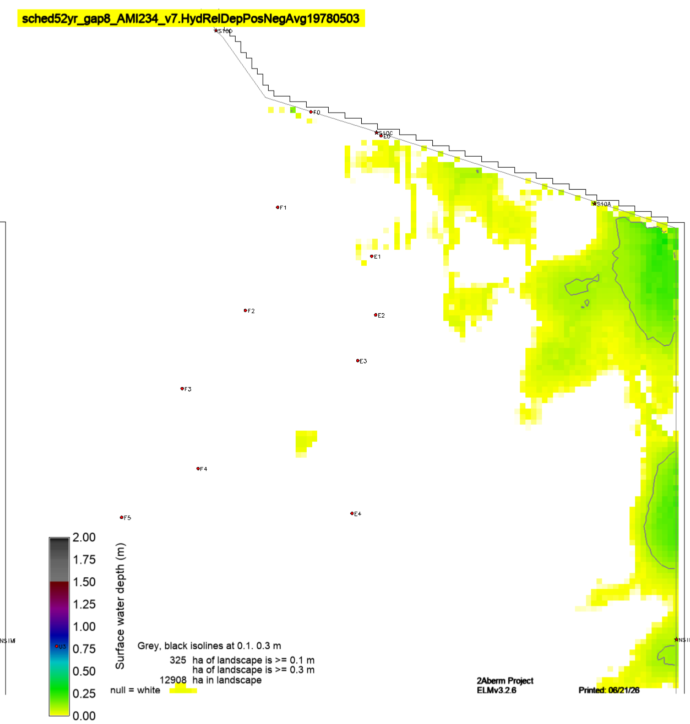
- ***3 Variables = Surface water depth[3], velocity, and chloride tracer*** - Following 15 Figure pages= Figure Map4, Map5, Map6 (5 scenario pages for each variable's Figure Map).
- Those 15 Map Figures are followed by 1-page summary bar graph "Figure sumMap4,5,6" of threshold marsh areas for all variables, all scenarios.
- Bullets below are **difference map "pattern judgment" summaries** of results in the below 15 Map Figures:
    - These 30-d mean snapshot evaluations are associated with a somewhat **"typical" peak high-flow period of S10 inflows, capturing the effects of the relatively brief seasonal periods of high S10 inflows**.
    - At this 30-d mean snapshot time scale for high-flow periods, velocity and depth appear to be somewhat more sensitive/useful variable than chloride, but all three variables provided useful information.
    - Gaps: moderate NEberm subregion benefit seen via the 3 variables
    - Plug: broad and large, meaningful NEberm subregion benefits seen via the 3 variables
    - Gaps&Plug: broad and large, meaningful NEberm subregion benefits seen via the 3 variables; but few benefits beyond Plug-only
    - AMI&Gaps: meaningful NEberm subregion benefits inthe 3 variables
        - meaningful NEberm subregion benefits seen via depth and velocity, but somewhat less than AMI&Gaps&Plug; moderate benefits seen via chloride
        - meaningful slough-specific benefits seen via the depth and velocity variables, but less than AMI&Gaps&Plug
        - no slough-specific response via the chloride variable
    - AMI&Gaps&Plug: meaningful NEberm subregion benefits seen via the 3 variables
        - broad and large, meaningful NEberm subregion benefits seen via the 3 variables, and more than AMI&Gaps
        - large, meaningful slough-specific benefits seen via the depth and velocity variables, and more than AMI&Gaps
        - no slough-specific response via the chloride variable

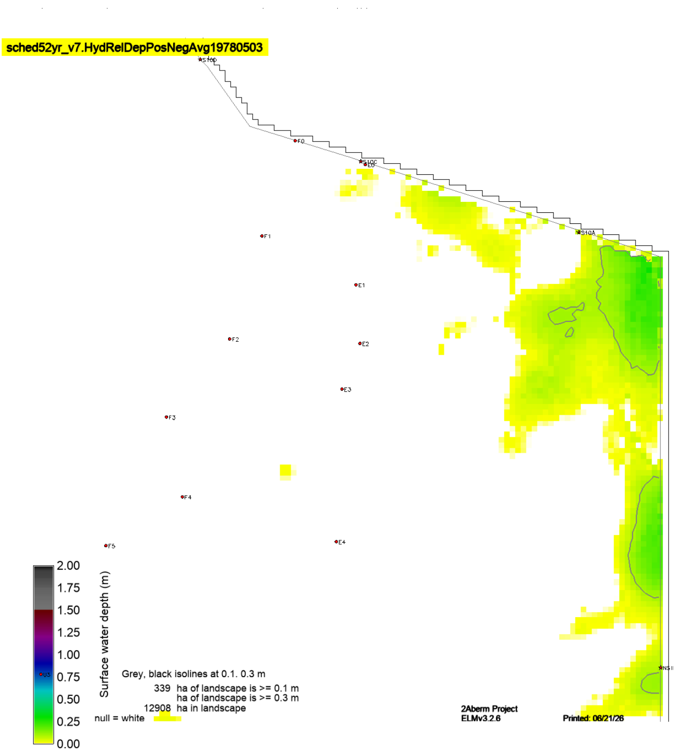
[3] The maps displaying surface water depth show ONLY positive values of the variable "**HydRelDepPosNeg**" (i.e., not their negative, below-ground depths). Their **difference maps (middle in fig) calculate ALL differences (above and below ground) and thus may display differences in absense of surface water in the left and/or right maps**.

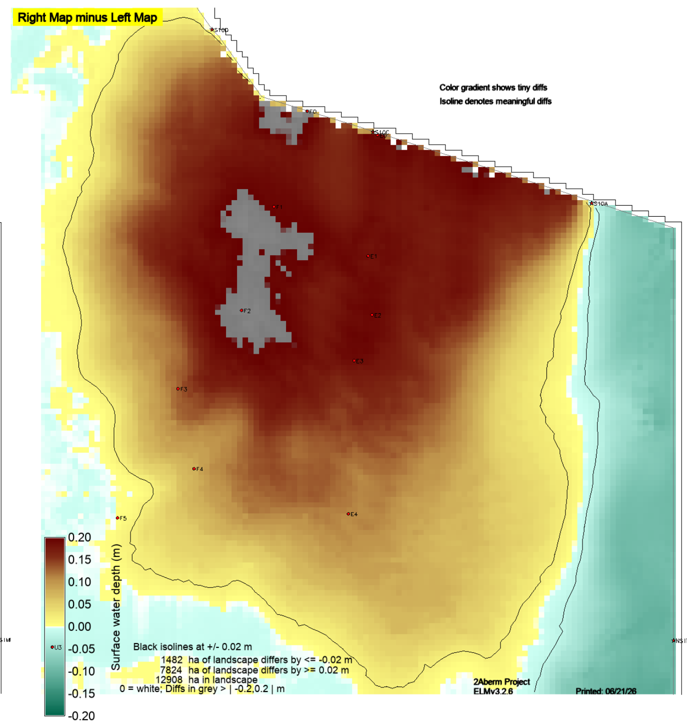

sched52yr_v7.HydRelDepPosNegAvg19780503
Surface water depth (m)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Grey, black isolines at 0.1. 0.3 m
339 ha of landscape is >= 0.1 m
ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Surface water depth (m)
0.20
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.20
Black isolines at +/- 0.02 m
1461 ha of landscape differs by <= -0.02 m
7854 ha of landscape differs by >= 0.02 m
12908 ha in landscape
0 = white; Diffs in grey > | -0.2,0.2 | m
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

sched52yr_gap8_AMI234_plug_v7.HydRelDepPosNegAvg19780503
Surface water depth (m)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Grey, black isolines at 0.1. 0.3 m
1326 ha of landscape is >= 0.1 m
1 ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

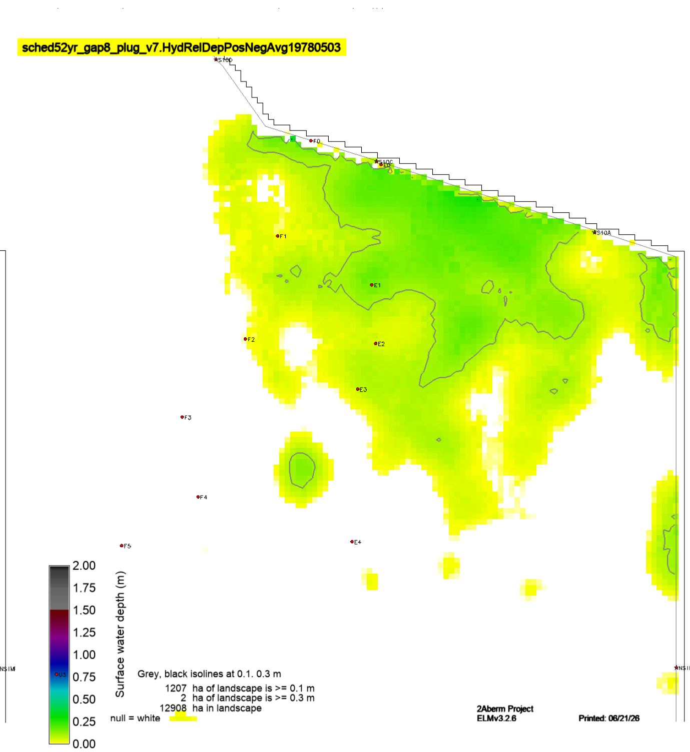

sched52yr_v7.HydRelDepPosNegAvg19780503
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Surface water depth (m)
Grey, black isolines at 0.1, 0.3 m
339 ha of landscape is >= 0.1 m
ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

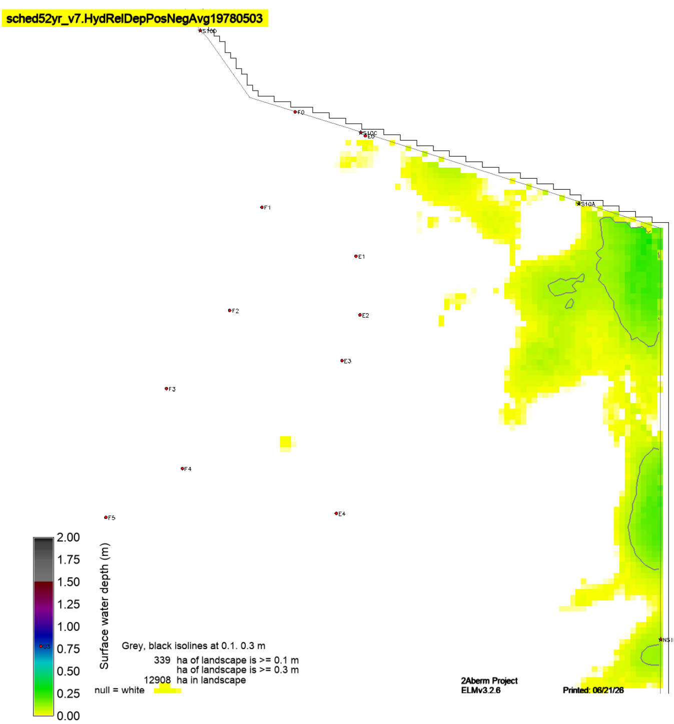

Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
0.20
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.20
Surface water depth (m)
Black isolines at +/- 0.02 m
45 ha of landscape differs by <= -0.02 m
1298 ha of landscape differs by >= 0.02 m
12908 ha in landscape
0 = white; Diffs in grey > | -0.2,0.2 | m
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

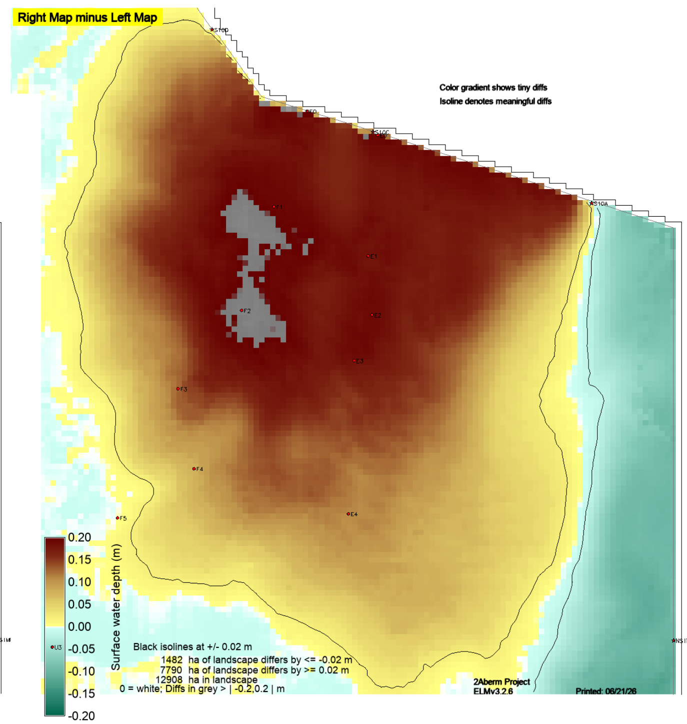

sched52yr_gap8_AMI234_v7.HydRelDepPosNegAvg19780503
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Surface water depth (m)
Grey, black isolines at 0.1, 0.3 m
325 ha of landscape is >= 0.1 m
ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

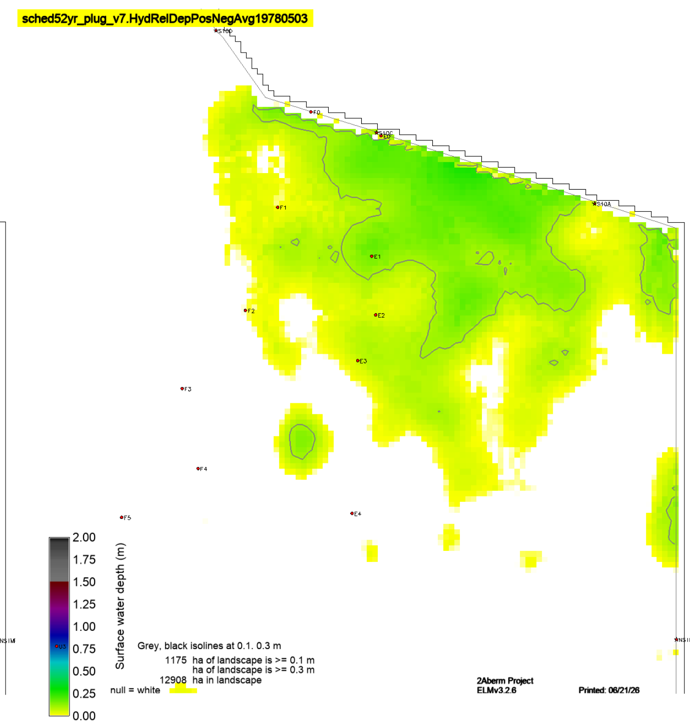

sched52yr_v7.HydRelDepPosNegAvg19780503
Surface water depth (m)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Grey, black isolines at 0.1. 0.3 m
339 ha of landscape is >= 0.1 m
ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

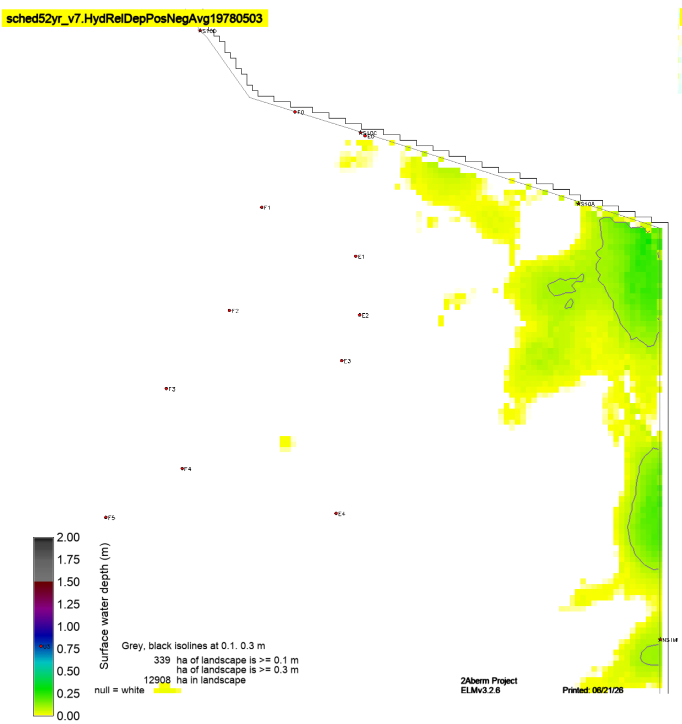

Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Surface water depth (m)
0.20
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.20
Black isolines at +/- 0.02 m
1482 ha of landscape differs by <= -0.02 m
7824 ha of landscape differs by >= 0.02 m
12908 ha in landscape
0 = white; Diffs in grey > | -0.2,0.2 | m
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

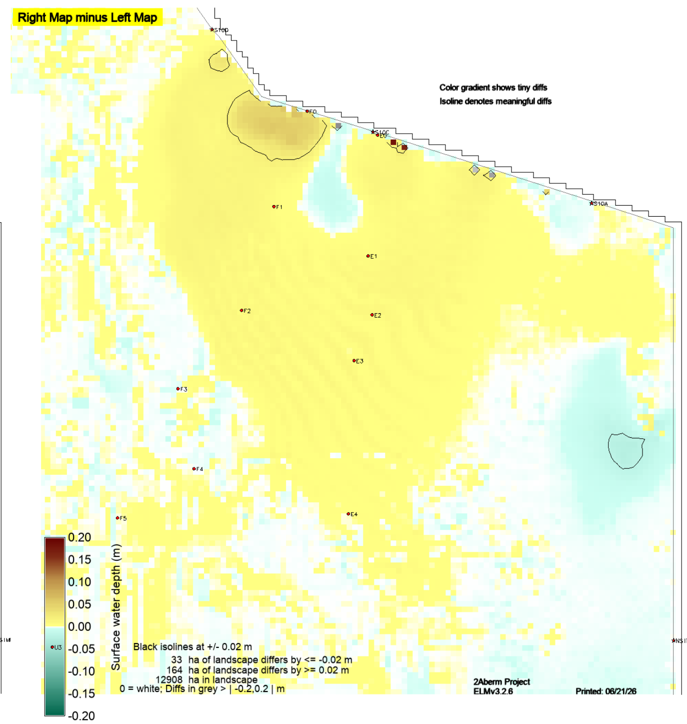

sched52yr_gap8_plug_v7.HydRelDepPosNegAvg19780503
Surface water depth (m)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Grey, black isolines at 0.1. 0.3 m
1207 ha of landscape is >= 0.1 m
2 ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

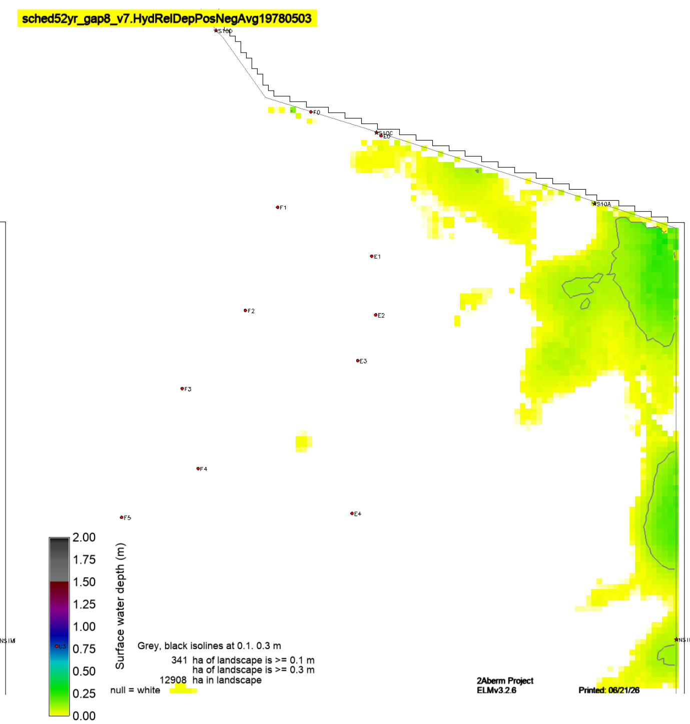

sched52yr_v7.HydRelDepPosNegAvg19780503
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Surface water depth (m)
Grey, black isolines at 0.1. 0.3 m
339 ha of landscape is >= 0.1 m
ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

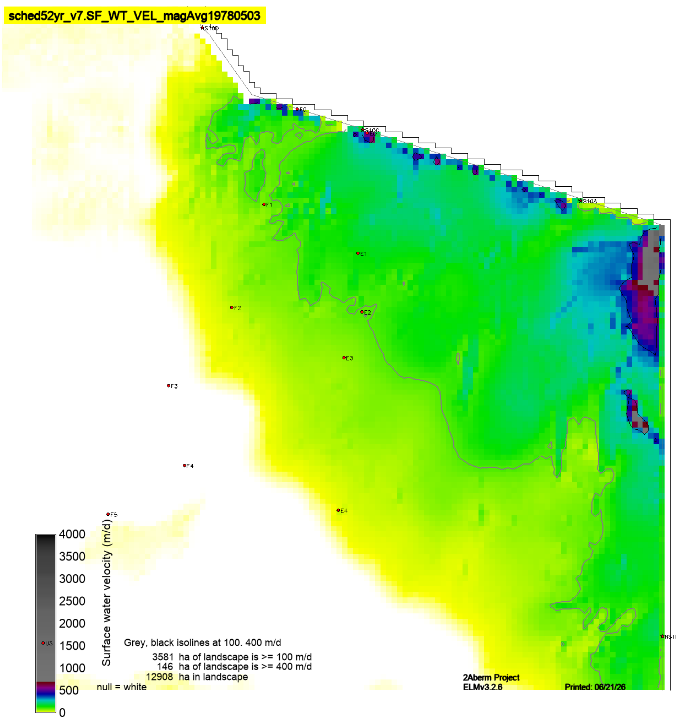

Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
0.20
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.20
Surface water depth (m)
Black isolines at +/- 0.02 m
1482 ha of landscape differs by <= -0.02 m
7790 ha of landscape differs by >= 0.02 m
12908 ha in landscape
0 = white; Diffs in grey > | -0.2,0.2 | m
2Aberm Project
ELMv3.2.6
Printed: 08/21/26


sched52yr_plug_v7.HydRelDepPosNegAvg19780503
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Surface water depth (m)
Grey, black isolines at 0.1. 0.3 m
1175 ha of landscape is >= 0.1 m
ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

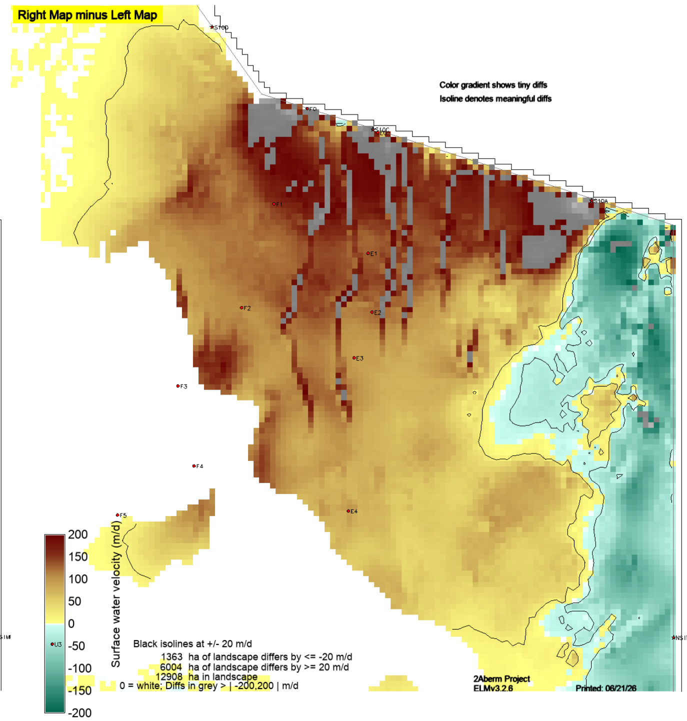

sched52yr_v7.HydRelDepPosNegAvg19780503
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Surface water depth (m)
Grey, black isolines at 0.1. 0.3 m
339 ha of landscape is >= 0.1 m
ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26


Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
0.20
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.20
Surface water depth (m)
Black isolines at +/- 0.02 m
33 ha of landscape differs by <= -0.02 m
164 ha of landscape differs by >= 0.02 m
12908 ha in landscape
0 = white; Diffs in grey > | -0.2,0.2 | m
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

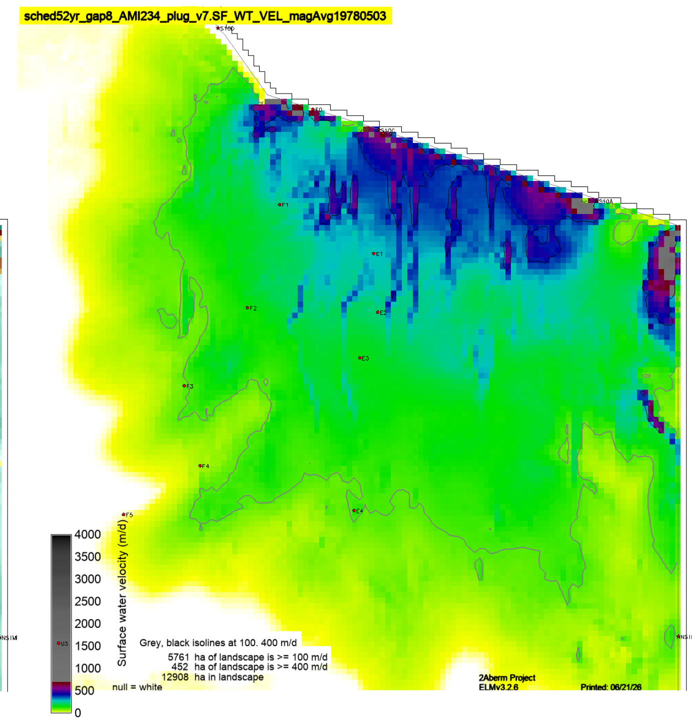

sched52yr_gap8_v7.HydRelDepPosNegAvg19780503
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Surface water depth (m)
Grey, black isolines at 0.1. 0.3 m
341 ha of landscape is >= 0.1 m
ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26



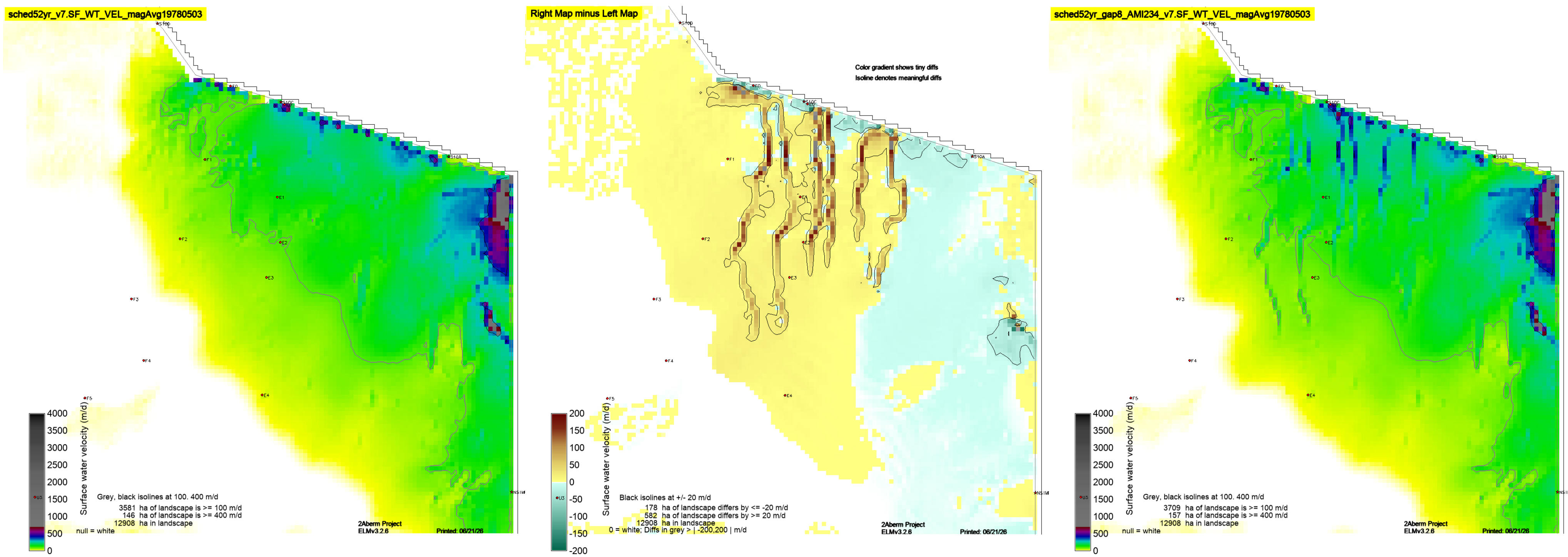
sched52yr_v7.SF_WT_VEL_magAvg19780503
4000
3500
3000
2500
2000
1500
1000
500
0
Surface water velocity (m/d)
Grey, black isolines at 100. 400 m/d
3581 ha of landscape is >= 100 m/d
146 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26



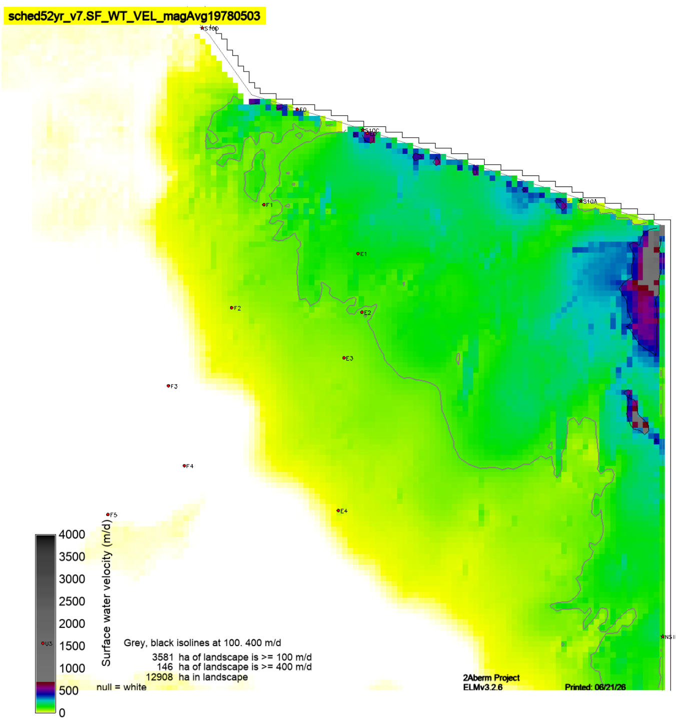
Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
200
150
100
50
0
-50
-100
-150
-200
Surface water velocity (m/d)
Black isolines at +/- 20 m/d
1363 ha of landscape differs by <= -20 m/d
6004 ha of landscape differs by >= 20 m/d
12908 ha in landscape
0 = white; Diffs in grey > | -200,200 | m/d
2Aberm Project
ELMv3.2.6
Printed: 08/21/26



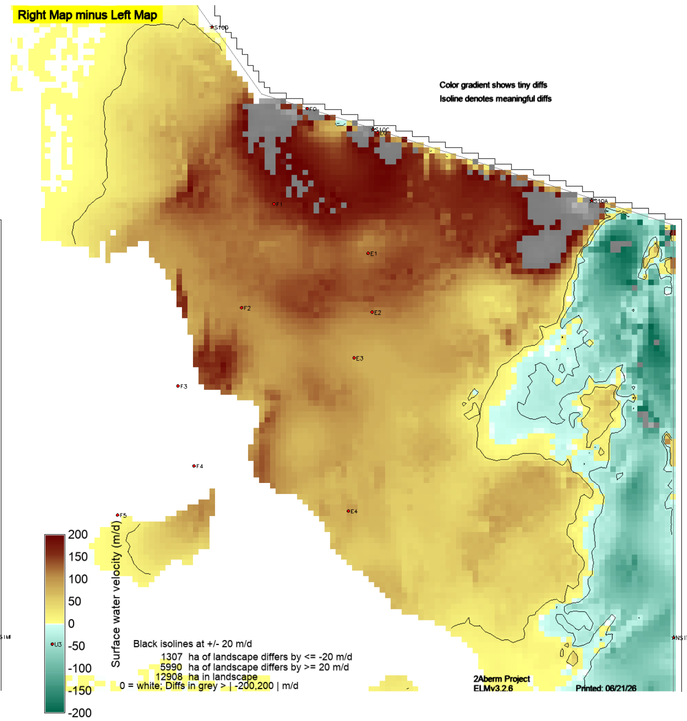
sched52yr_gap8_AMI234_plug_v7.SF_WT_VEL_magAvg19780503
4000
3500
3000
2500
2000
1500
1000
500
0
Surface water velocity (m/d)
Grey, black isolines at 100. 400 m/d
5761 ha of landscape is >= 100 m/d
452 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26



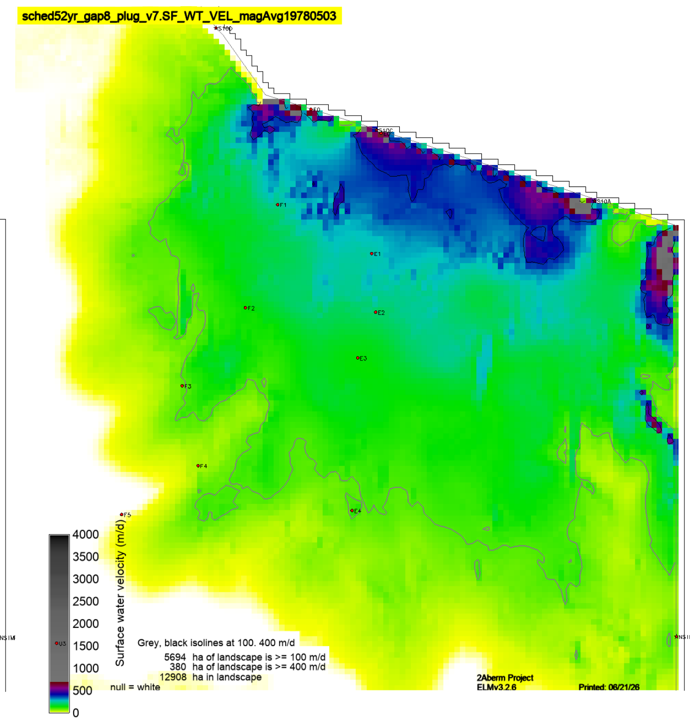
sched52yr_v7.SF_WT_VEL_magAvg19780503
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100, 400 m/d
3581 ha of landscape is >= 100 m/d
146 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26
Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Surface water velocity (m/d)
200
150
100
50
0
-50
-100
-150
-200
Black isolines at +/- 20 m/d
178 ha of landscape differs by <= -20 m/d
582 ha of landscape differs by >= 20 m/d
12908 ha in landscape
0 = white; Diffs in grey > | -200,200 | m/d
2Aberm Project
ELMv3.2.6
Printed: 06/21/26
sched52yr_gap8_AMI234_v7.SF_WT_VEL_magAvg19780503
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100, 400 m/d
3709 ha of landscape is >= 100 m/d
157 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26



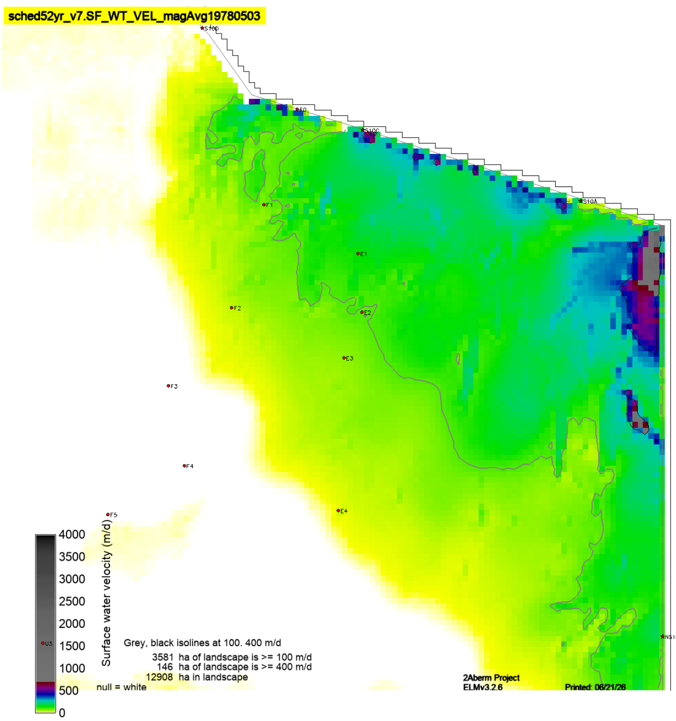
sched52yr_v7.SF_WT_VEL_magAvg19780503
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100. 400 m/d
3581 ha of landscape is >= 100 m/d
146 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

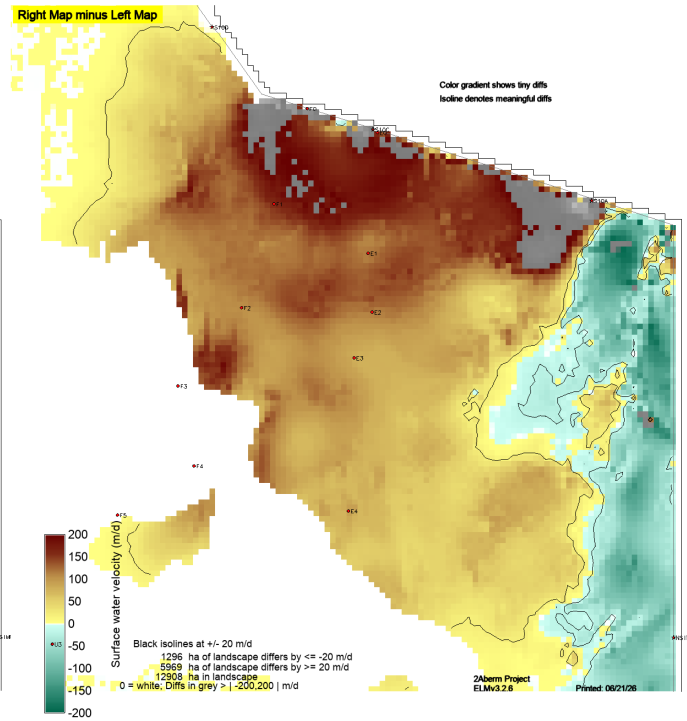


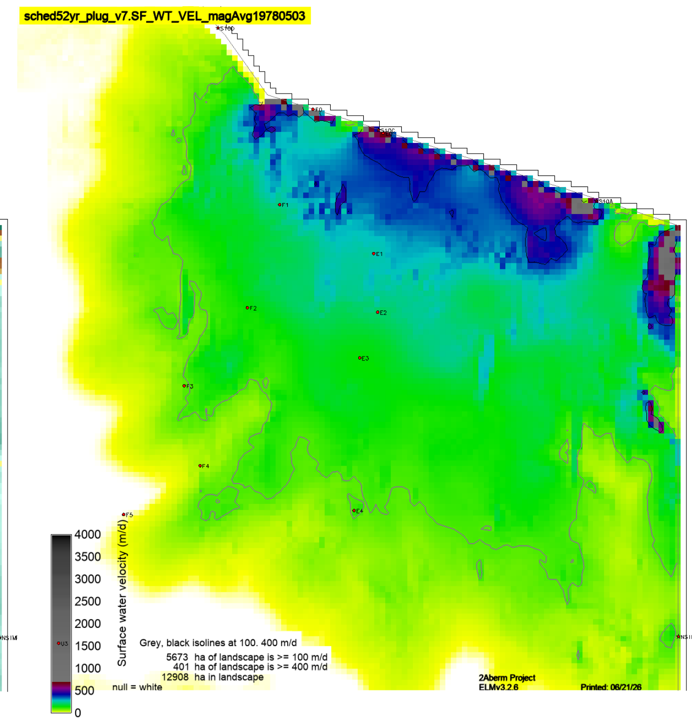
Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Surface water velocity (m/d)
200
150
100
50
0
-50
-100
-150
-200
Black isolines at +/- 20 m/d
1307 ha of landscape differs by <= -20 m/d
5990 ha of landscape differs by >= 20 m/d
12908 ha in landscape
0 = white; Diffs in grey > | -200,200 | m/d
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

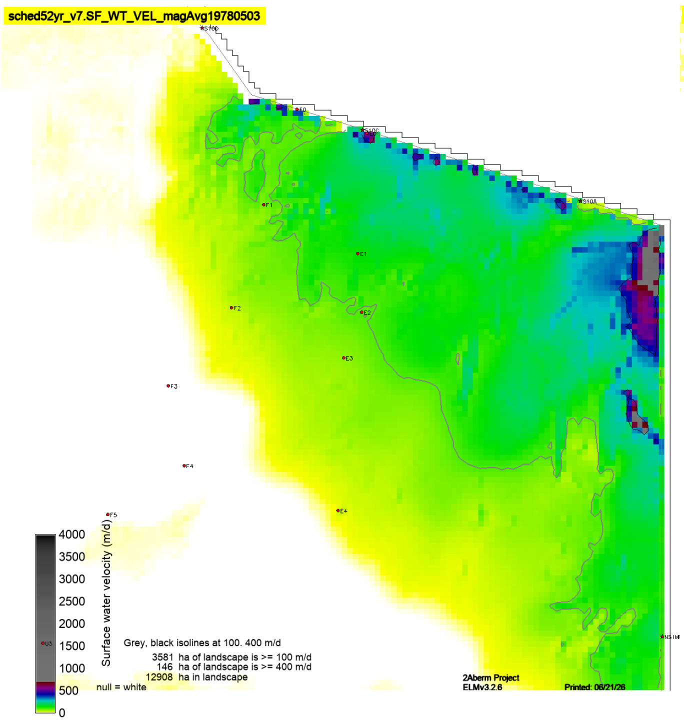


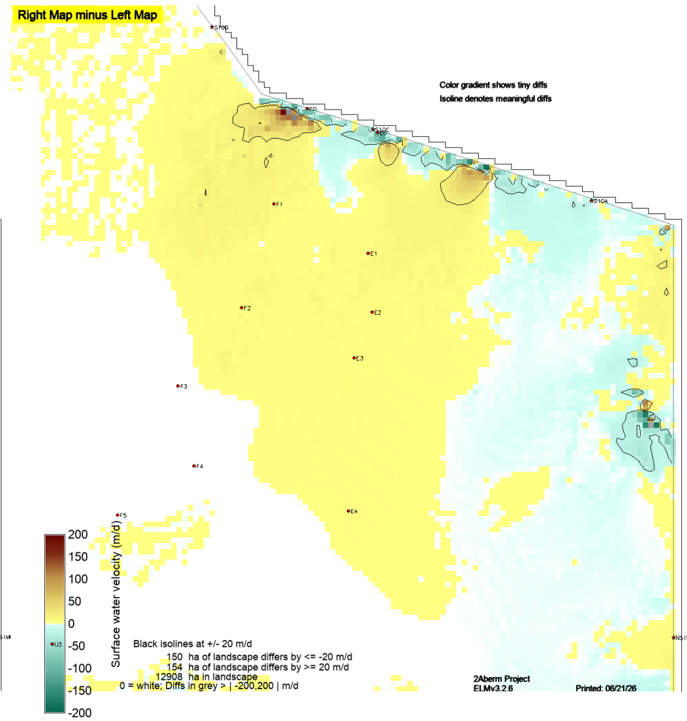
sched52yr_gap8_plug_v7.SF_WT_VEL_magAvg19780503
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100. 400 m/d
5694 ha of landscape is >= 100 m/d
380 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

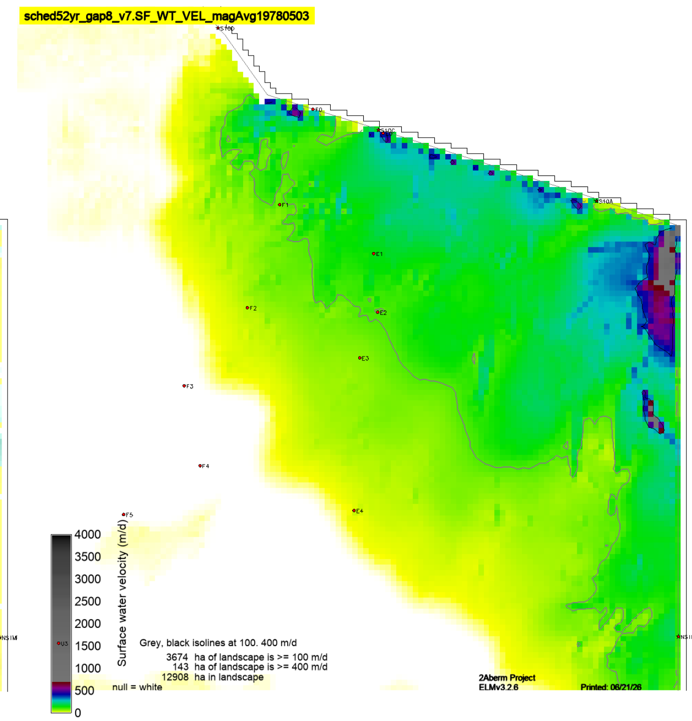

sched52yr_v7.SF_WT_VEL_magAvg19780503
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100. 400 m/d
3581 ha of landscape is >= 100 m/d
146 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

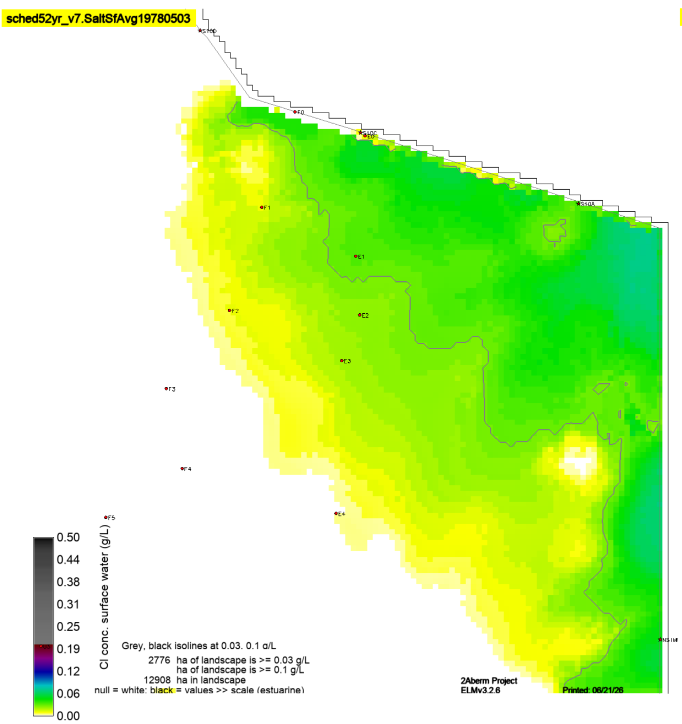

Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Surface water velocity (m/d)
200
150
100
50
0
-50
-100
-150
-200
Black isolines at +/- 20 m/d
1296 ha of landscape differs by <= -20 m/d
5969 ha of landscape differs by >= 20 m/d
12908 ha in landscape
0 = white; Diffs in grey > | -200,200 | m/d
2Aberm Project
ELMv3.2.6
Printed: 06/21/26


sched52yr_plug_v7.SF_WT_VEL_magAvg19780503
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100. 400 m/d
5673 ha of landscape is >= 100 m/d
401 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

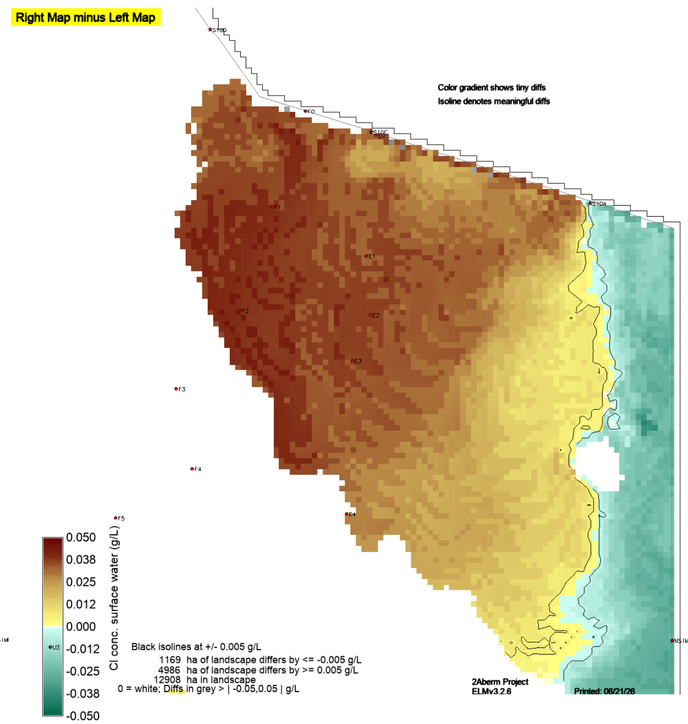

sched52yr_v7.SF_WT_VEL_magAvg19780503
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100. 400 m/d
3581 ha of landscape is >= 100 m/d
146 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26


Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Surface water velocity (m/d)
200
150
100
50
0
-50
-100
-150
-200
Black isolines at +/- 20 m/d
150 ha of landscape differs by <= -20 m/d
154 ha of landscape differs by >= 20 m/d
12908 ha in landscape
0 = white; Diffs in grey > | -200,200 | m/d
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

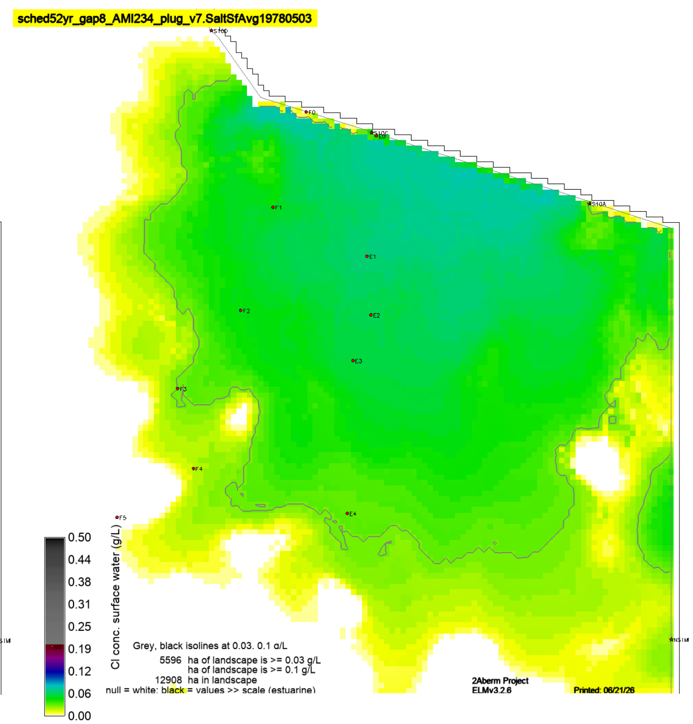

sched52yr_gap8_v7.SF_WT_VEL_magAvg19780503
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100. 400 m/d
3674 ha of landscape is >= 100 m/d
143 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26



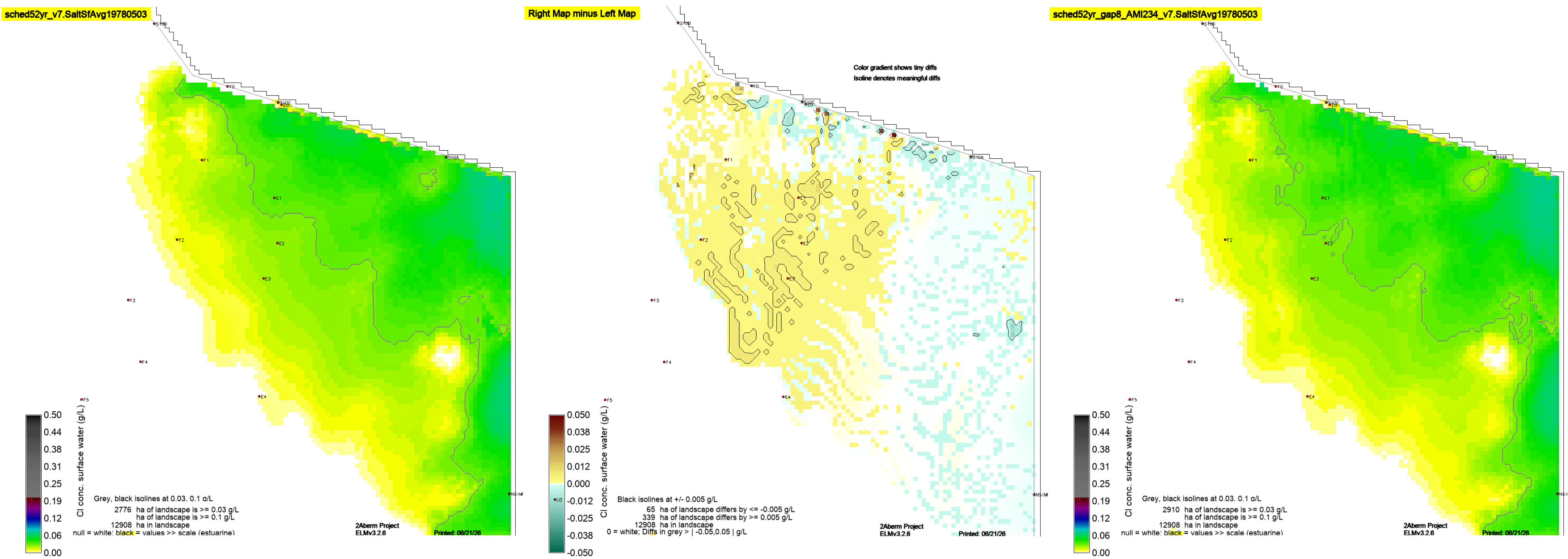
sched52yr_v7.SaltSfAvg19780503
Cl conc. surface water (g/L)
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Grey, black isolines at 0.03. 0.1 g/L
2776 ha of landscape is >= 0.03 g/L
ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white: black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26



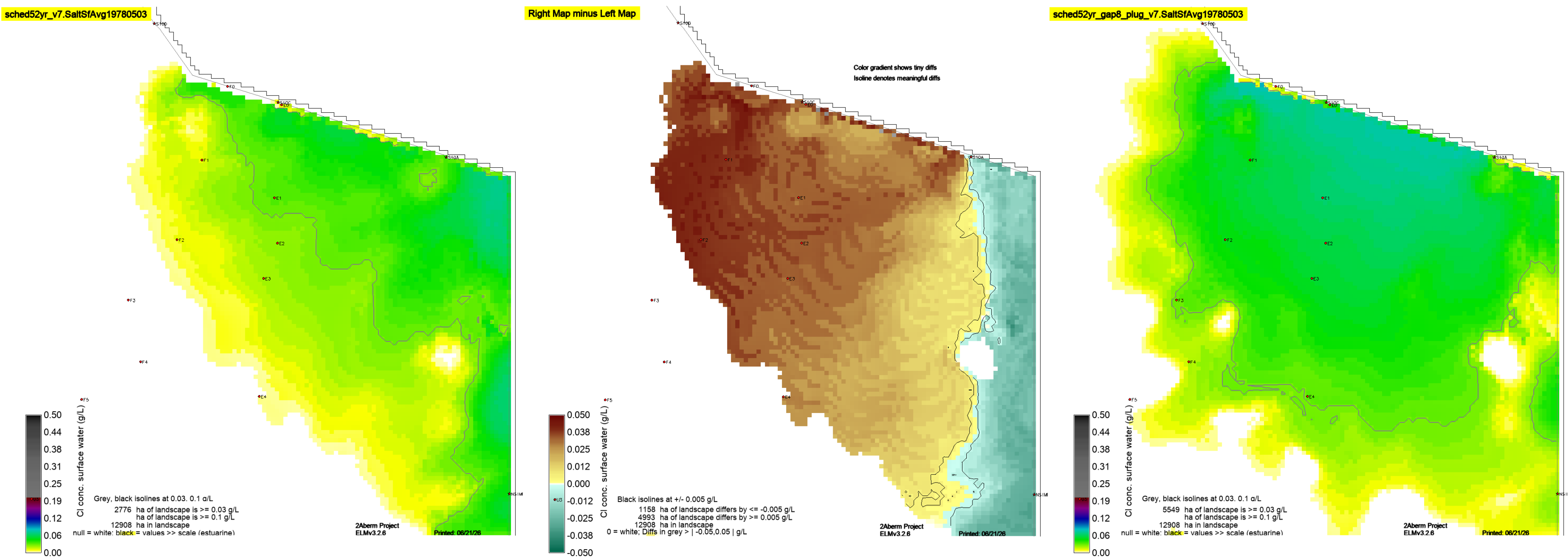
Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Cl conc. surface water (g/L)
0.050
0.038
0.025
0.012
0.000
-0.012
-0.025
-0.038
-0.050
Black isolines at +/- 0.005 g/L
1169 ha of landscape differs by <= -0.005 g/L
4986 ha of landscape differs by >= 0.005 g/L
12908 ha in landscape
0 = white; Diffs in grey > | -0.05,0.05 | g/L
2Aberm Project
ELMv3.2.6
Printed: 06/21/26



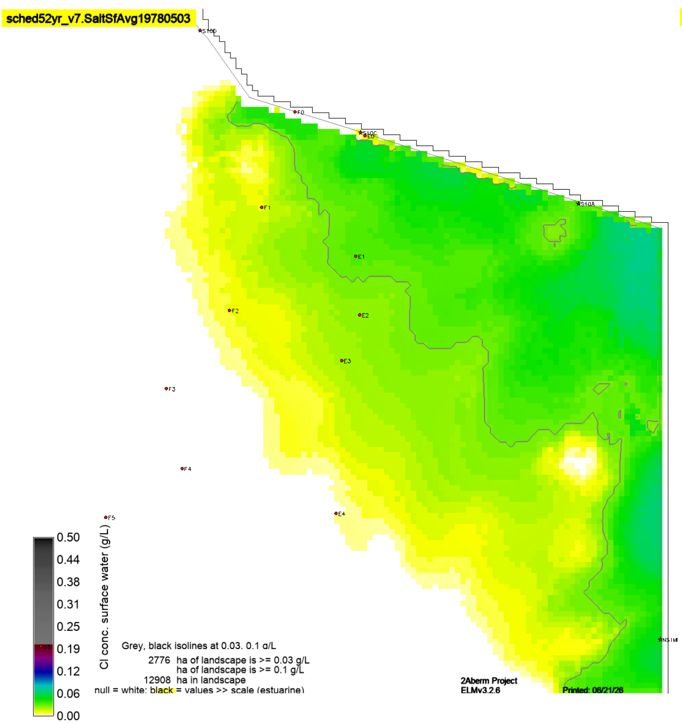
sched52yr_gap8_AMI234_plug_v7.SaltSfAvg19780503
Cl conc. surface water (g/L)
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Grey, black isolines at 0.03. 0.1 g/L
5596 ha of landscape is >= 0.03 g/L
ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white: black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

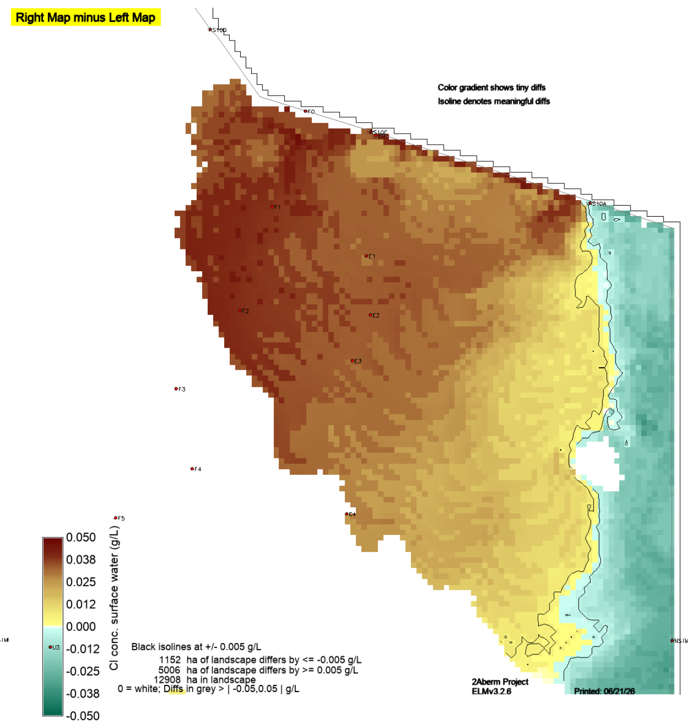


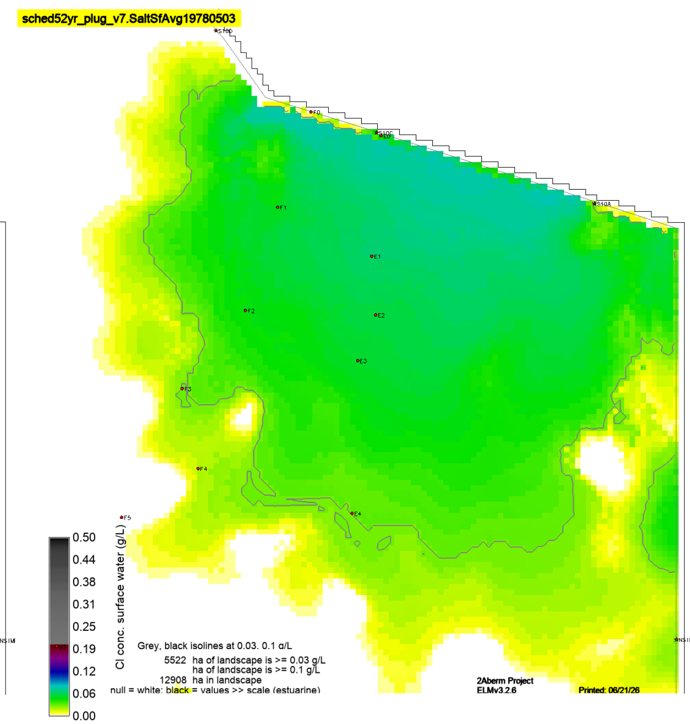
sched52yr_v7.SaltSfAvg19780503
Cl conc. surface water (g/L)
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Grey, black isolines at 0.03. 0.1 g/L
2776 ha of landscape is >= 0.03 g/L
ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white: black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26
Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Cl conc. surface water (g/L)
0.050
0.038
0.025
0.012
0.000
-0.012
-0.025
-0.038
-0.050
Black isolines at +/- 0.005 g/L
65 ha of landscape differs by <= -0.005 g/L
339 ha of landscape differs by >= 0.005 g/L
12908 ha in landscape
0 = white; Diffs in grey > | -0.05,0.05 | g/L
2Aberm Project
ELMv3.2.6
Printed: 06/21/26
sched52yr_gap8_AMI234_v7.SaltSfAvg19780503
Cl conc. surface water (g/L)
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Grey, black isolines at 0.03. 0.1 g/L
2910 ha of landscape is >= 0.03 g/L
ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white: black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

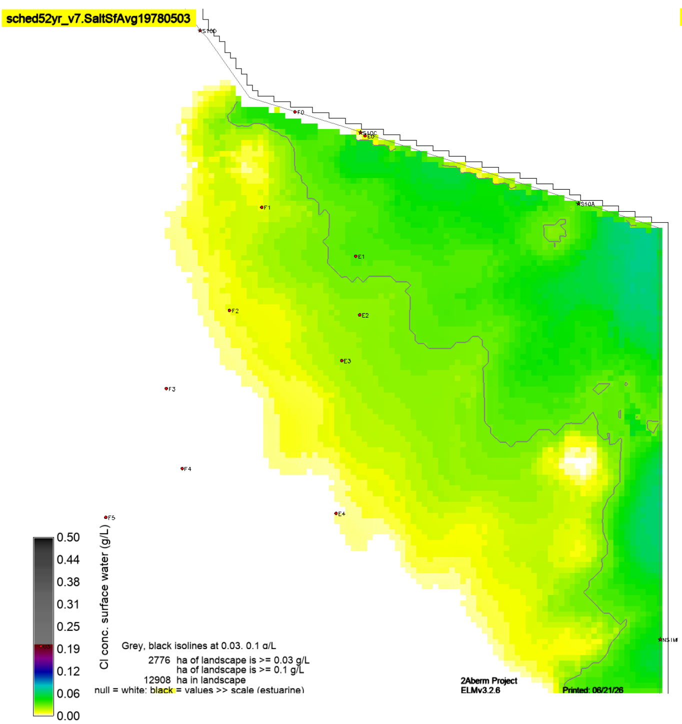


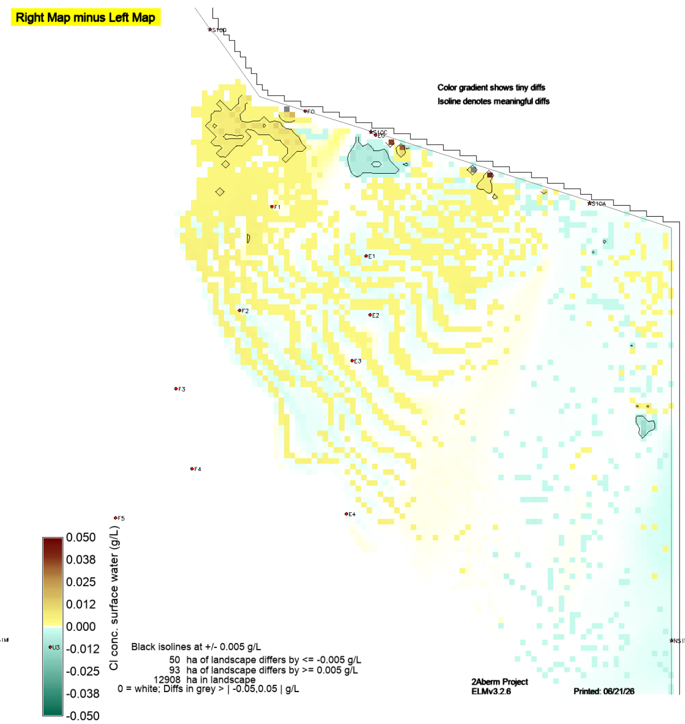
sched52yr_v7.SaltSfAvg19780503
Cl conc. surface water (g/L)
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Grey, black isolines at 0.03. 0.1 g/L
2776 ha of landscape is >= 0.03 g/L
ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white: black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26
Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Cl conc. surface water (g/L)
0.050
0.038
0.025
0.012
0.000
-0.012
-0.025
-0.038
-0.050
Black isolines at +/- 0.005 g/L
1158 ha of landscape differs by <= -0.005 g/L
4993 ha of landscape differs by >= 0.005 g/L
12908 ha in landscape
0 = white; Diffs in grey > | -0.05,0.05 | g/L
2Aberm Project
ELMv3.2.6
Printed: 06/21/26
sched52yr_gap8_plug_v7.SaltSfAvg19780503
Cl conc. surface water (g/L)
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Grey, black isolines at 0.03. 0.1 g/L
5549 ha of landscape is >= 0.03 g/L
ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white: black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

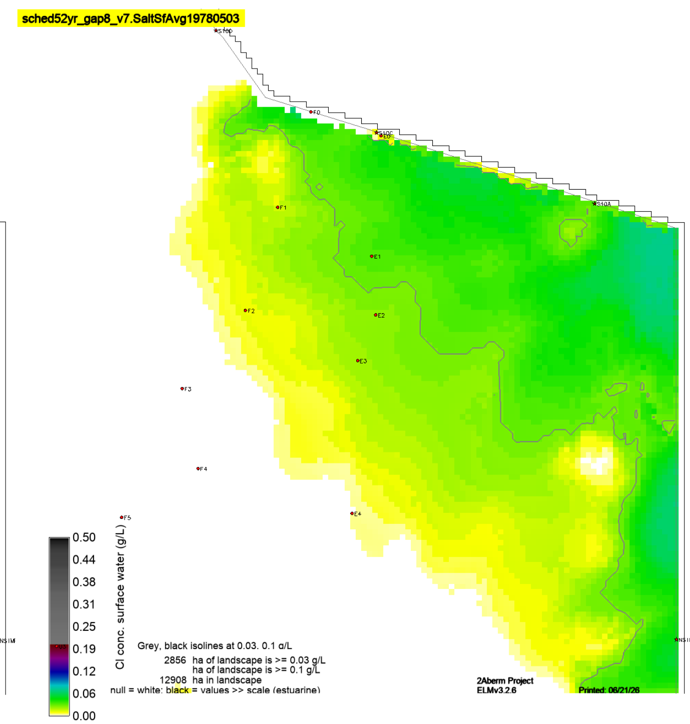

sched52yr_v7.SaltSfAvg19780503
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Cl conc. surface water (g/L)
Grey, black isolines at 0.03. 0.1 g/L
2776 ha of landscape is >= 0.03 g/L
ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white: black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26


Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
0.050
0.038
0.025
0.012
0.000
-0.012
-0.025
-0.038
-0.050
Cl conc. surface water (g/L)
Black isolines at +/- 0.005 g/L
1152 ha of landscape differs by <= -0.005 g/L
5006 ha of landscape differs by >= 0.005 g/L
12908 ha in landscape
0 = white; Diffs in grey > | -0.05,0.05 | g/L
2Aberm Project
ELMv3.2.6
Printed: 06/21/26


sched52yr_plug_v7.SaltSfAvg19780503
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Cl conc. surface water (g/L)
Grey, black isolines at 0.03. 0.1 g/L
5522 ha of landscape is >= 0.03 g/L
ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white: black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26


sched52yr_v7.SaltSfAvg19780503
Cl conc. surface water (g/L)
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Grey, black isolines at 0.03, 0.1 g/L
2776 ha of landscape is >= 0.03 g/L
ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white; black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 08/21/26


Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Cl conc. surface water (g/L)
0.050
0.038
0.025
0.012
0.000
-0.012
-0.025
-0.038
-0.050
Black isolines at +/- 0.005 g/L
50 ha of landscape differs by <= -0.005 g/L
93 ha of landscape differs by >= 0.005 g/L
12908 ha in landscape
0 = white; Diffs in grey > | -0.05,0.05 | g/L
2Aberm Project
ELMv3.2.6
Printed: 08/21/26


sched52yr_gap8_v7.SaltSfAvg19780503
Cl conc. surface water (g/L)
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Grey, black isolines at 0.03, 0.1 g/L
2856 ha of landscape is >= 0.03 g/L
ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white; black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

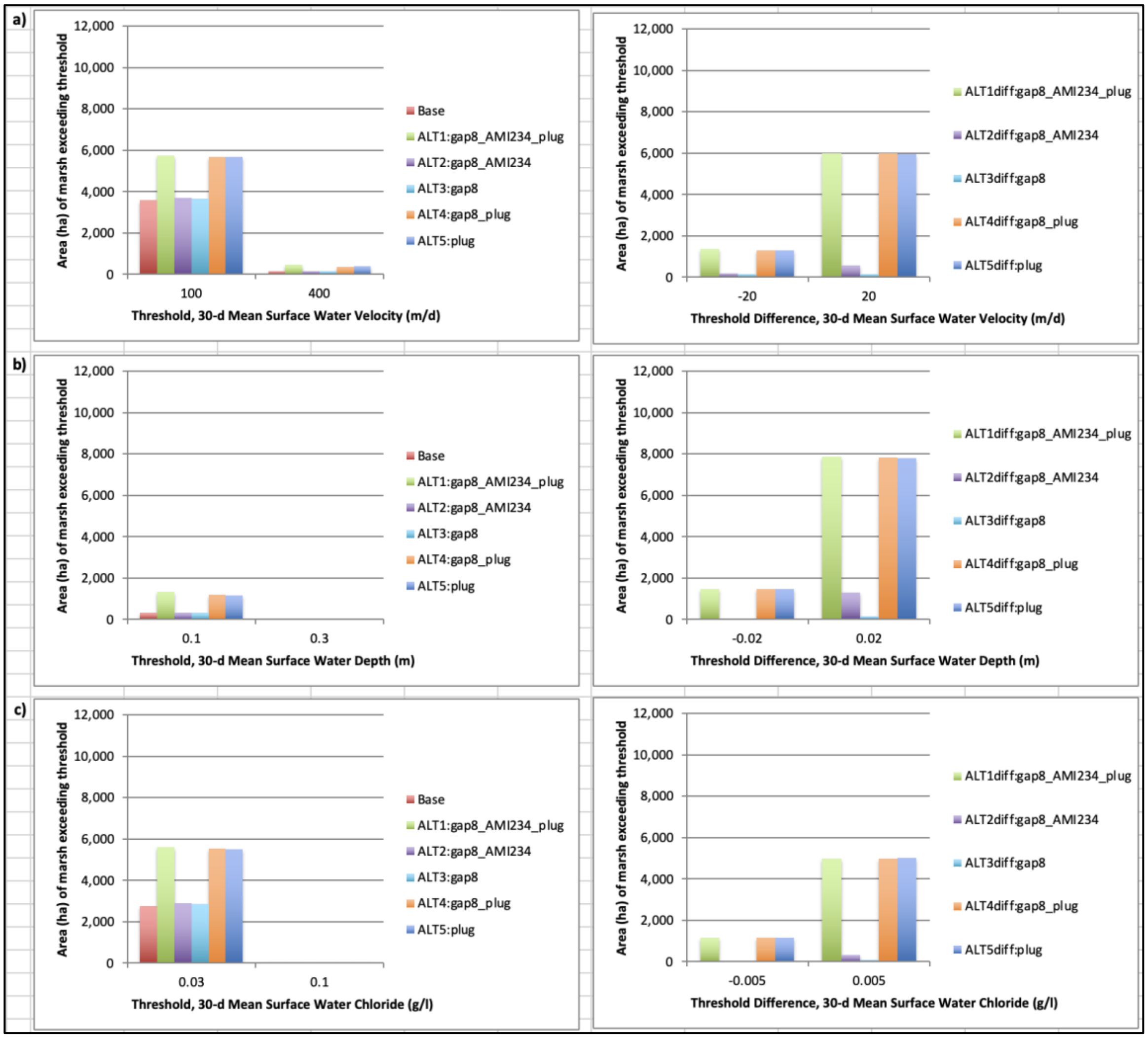


Figure sumMap4,5,6. NE berm subregion comparative bar graphs of contoured marsh areas shown in the above **High Flow year 30-d mean** mapsets - for the a) velocity, b) depth, and c) chloride variables, all Base & Alternative scenarios.

1.8.1.3 NEberm subregion: Hydrology, Low-flow year, wet season

- ***3 Variables = Surface water depth[4], velocity, and chloride tracer*** - Following 15 Figure pages= Figure Map7, Map8, Map9 (5 scenario pages for each variable's Figure Map).
- Those 15 Map Figures are followed by 1-page summary bar graph "Figure sumMap7,8,9" of threshold marsh areas for all variables, all scenarios.
- Bullets below are **difference map "pattern judgment" summaries** of results in the below 15 Map Figures:
    - These 30-d mean snapshot evaluations are associated with a somewhat **"typical" low-flow period of S10 inflows, capturing the effects of the relatively brief seasonal periods of low (but positive) S10 inflows**.
    - At this 30-d mean snapshot time scale for low-flow periods, velocity and depth appear to be somewhat more sensitive/useful variable than chloride, but all three variables provided useful information.
    - Gaps: little NEberm subregion benefit seen via the 3 variables, but velocity shows some highly localized benefits
    - Plug: broad & large, meaningful NEberm subregion benefits in 3 variables
    - Gaps&Plug: broad and large, meaningful NEberm subregion benefits seen via the 3 variables; but few benefits beyond Plug-only
    - AMI&Gaps: meaningful NEberm subregion benefits in the 3 variables
        - meaningful NEberm subregion benefits seen via depth and velocity, but somewhat less than AMI&Gaps&Plug; some decrease in variables (benefits) downstream of S10A
        - abbreviated in distance, but meaningful, slough-specific benefits seen via the depth and velocity variables, but less than AMI&Gaps&Plug
    - AMI&Gaps&Plug: meaningful NEberm subregion benefits seen via the 3 variables
        - meaningful NEberm subregion benefits seen via depth and velocity, but somewhat more than AMI&Gaps; some decrease in variables (benefits) downstream of S10A, and along east border
        - abbreviated in distance, but meaningful, slough-specific benefits seen in depth and velocity variables, but more than AMI&Gaps

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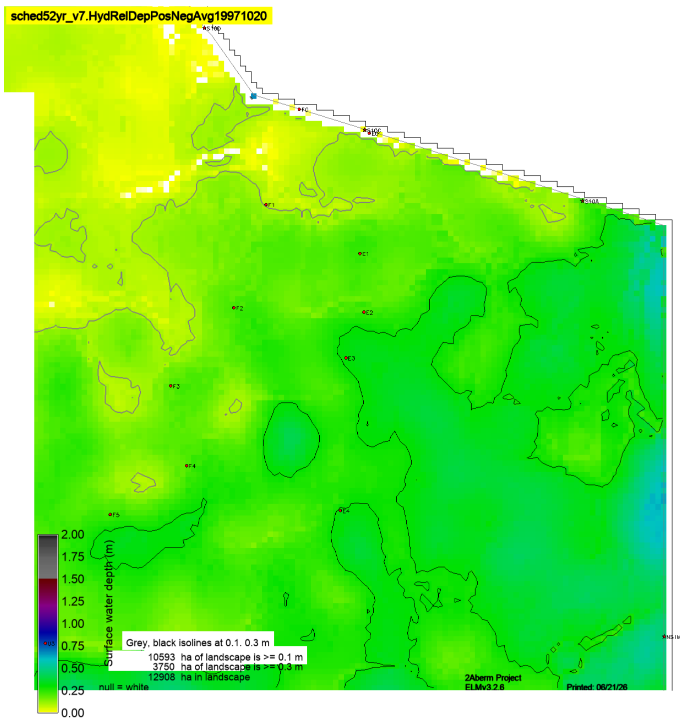
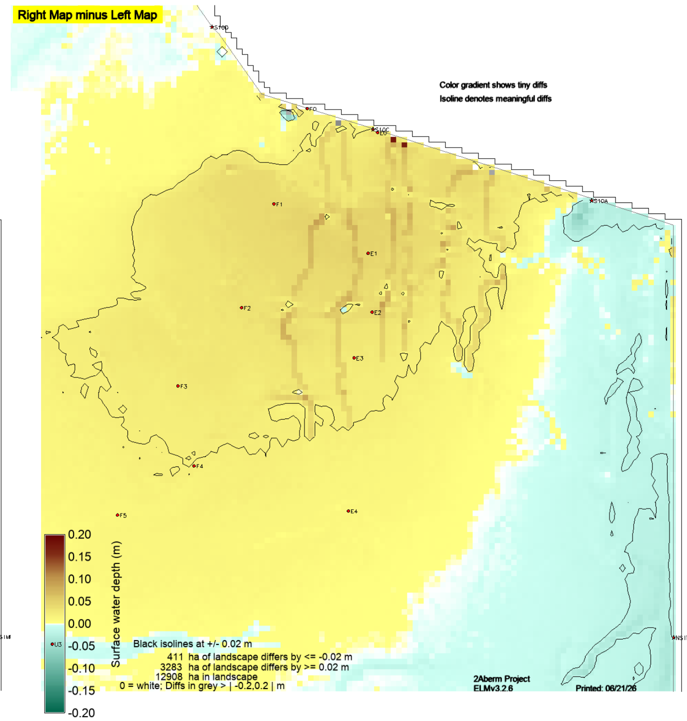
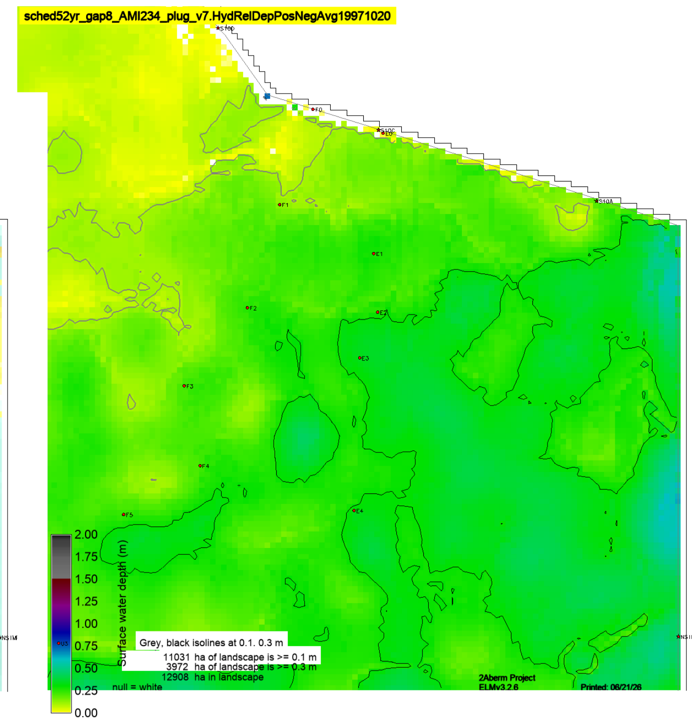
[4] The maps displaying surface water depth show ONLY positive values of the variable "**HydRelDepPosNeg**" (i.e., not their negative, below-ground depths). Their **difference maps (middle in fig) calculate ALL differences (above and below ground) and thus may display differences in absense of surface water in the left and/or right maps**.



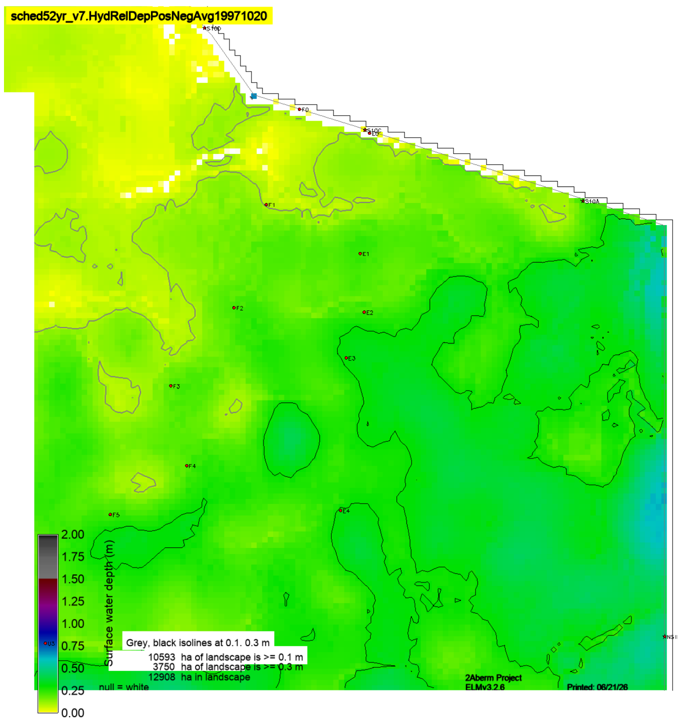
sched52yr_v7.HydRelDepPosNegAvg19971020
Surface water depth (m)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Grey, black isolines at 0.1. 0.3 m
10593 ha of landscape is >= 0.1 m
3750 ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

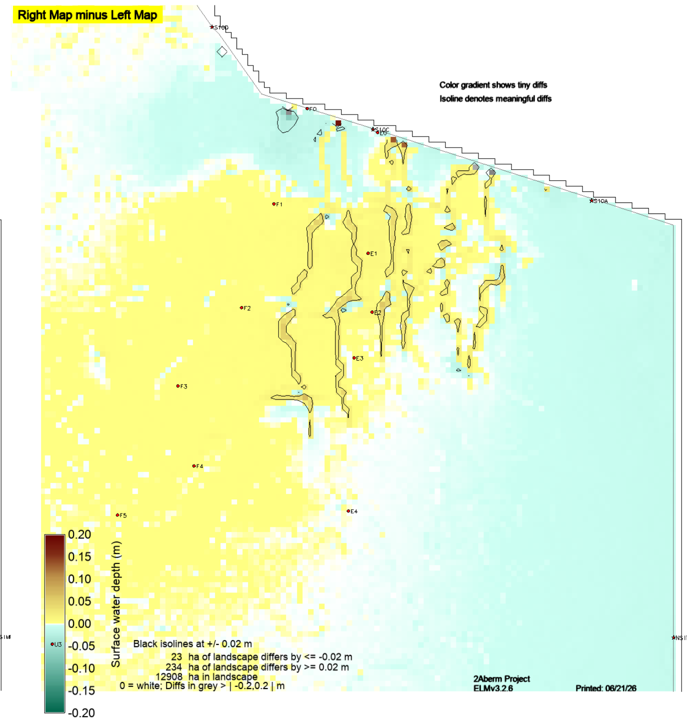


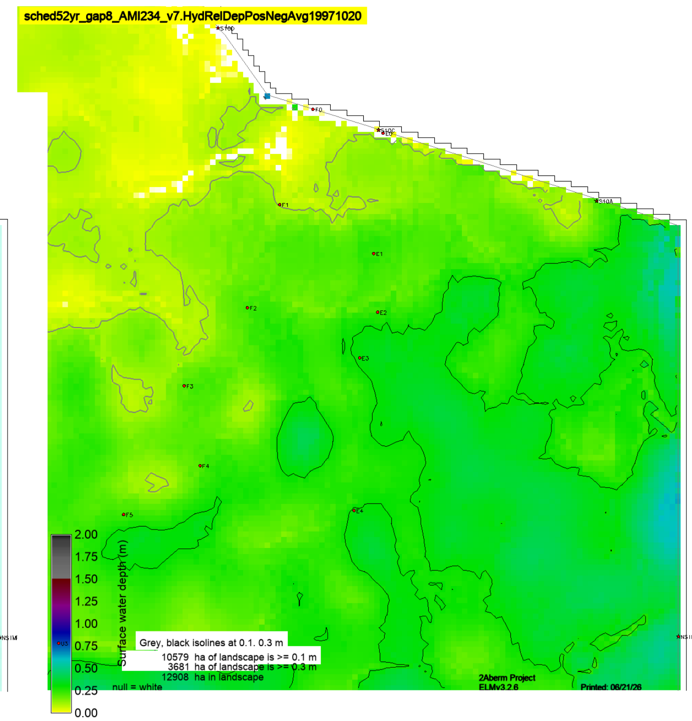
Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Surface water depth (m)
0.20
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.20
Black isolines at +/- 0.02 m
411 ha of landscape differs by <= -0.02 m
3283 ha of landscape differs by >= 0.02 m
12908 ha in landscape
0 = white; Diffs in grey > | -0.2,0.2 | m
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

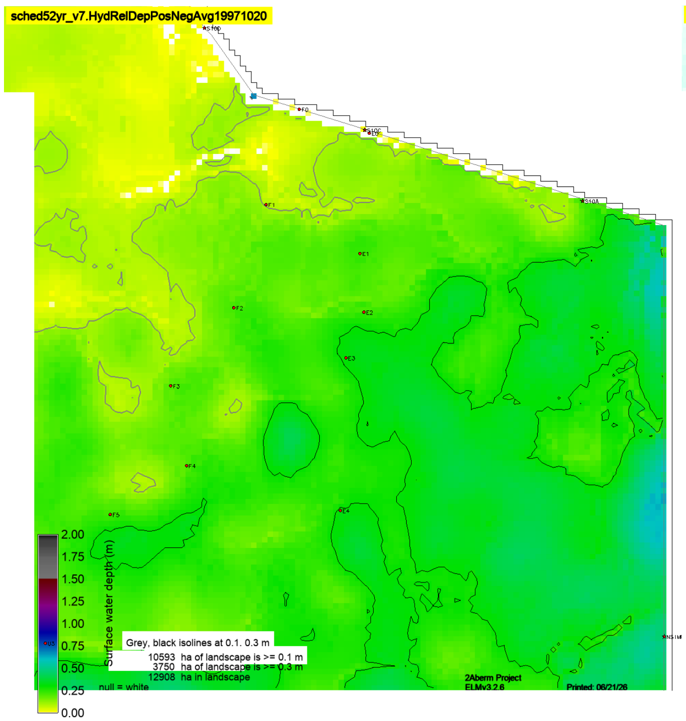


sched52yr_gap8_AMI234_plug_v7.HydRelDepPosNegAvg19971020
Surface water depth (m)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Grey, black isolines at 0.1. 0.3 m
11031 ha of landscape is >= 0.1 m
3972 ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

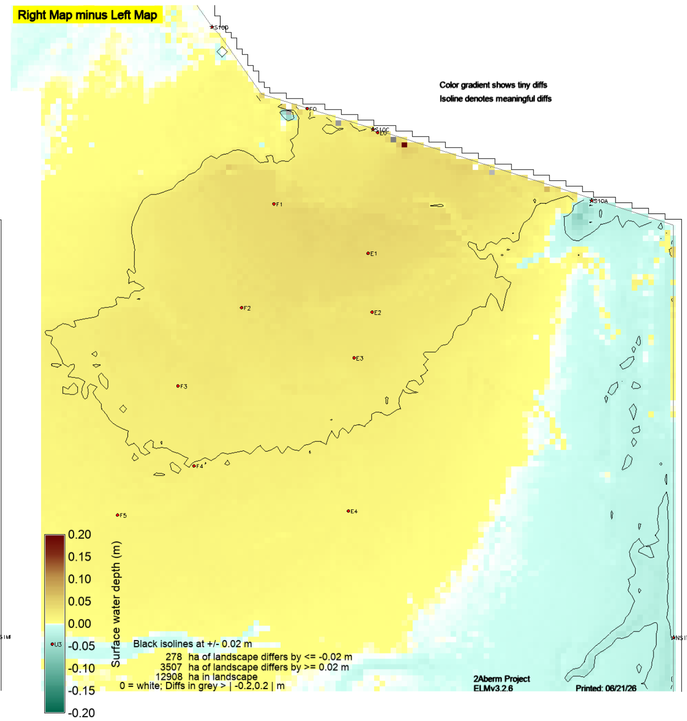

sched52yr_v7.HydRelDepPosNegAvg19971020
S10D
F0
S10C
F1
E1
F2
E2
E3
F3
F4
F5
E4
NS1M
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Surface water depth (m)
Grey, black isolines at 0.1, 0.3 m
10593 ha of landscape is >= 0.1 m
3750 ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26


Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
0.20
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.20
Surface water depth (m)
Black isolines at +/- 0.02 m
23 ha of landscape differs by <= -0.02 m
234 ha of landscape differs by >= 0.02 m
12908 ha in landscape
0 = white; Diffs in grey > | -0.2,0.2 | m
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

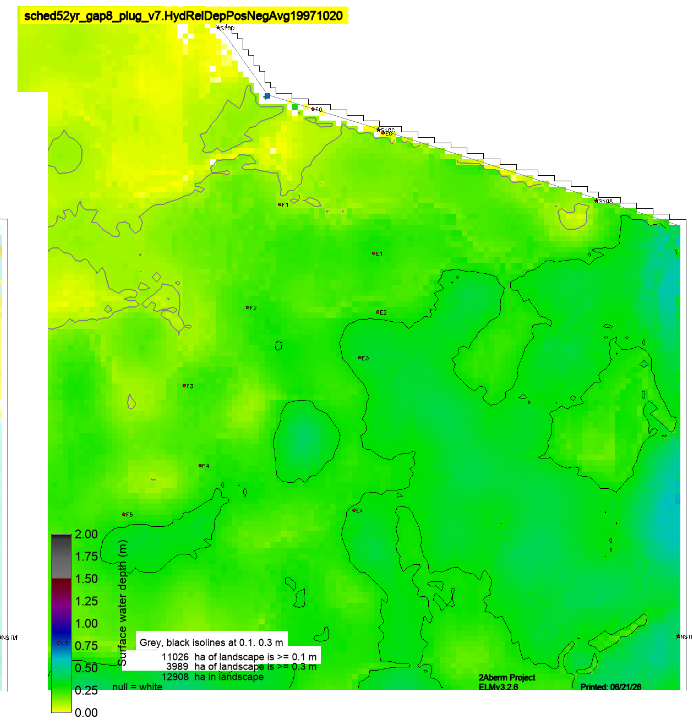

sched52yr_gap8_AMI234_v7.HydRelDepPosNegAvg19971020
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Surface water depth (m)
Grey, black isolines at 0.1, 0.3 m
10579 ha of landscape is >= 0.1 m
3681 ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26



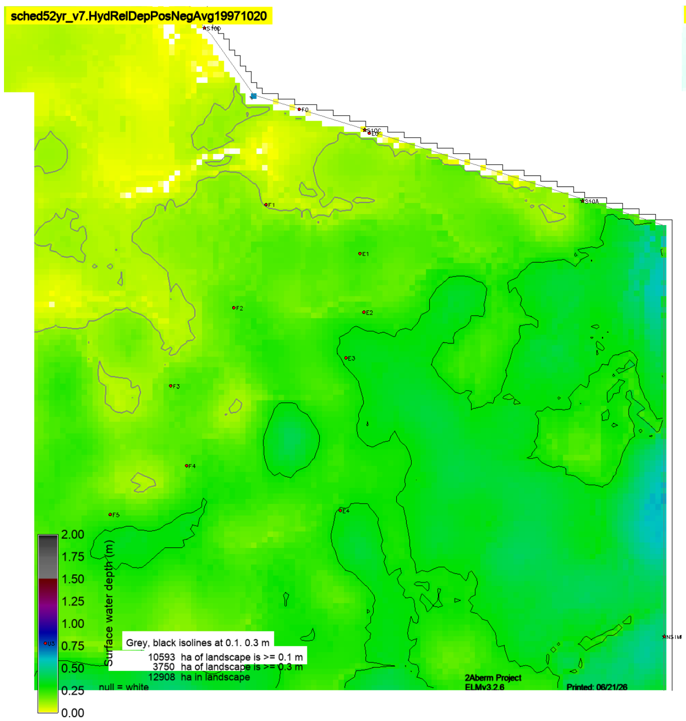
sched52yr_v7.HydRelDepPosNegAvg19971020
F1
E1
F2
E2
E3
F3
F4
F5
E4
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Surface water depth (m)
Grey, black isolines at 0.1, 0.3 m
10593 ha of landscape is >= 0.1 m
3750 ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

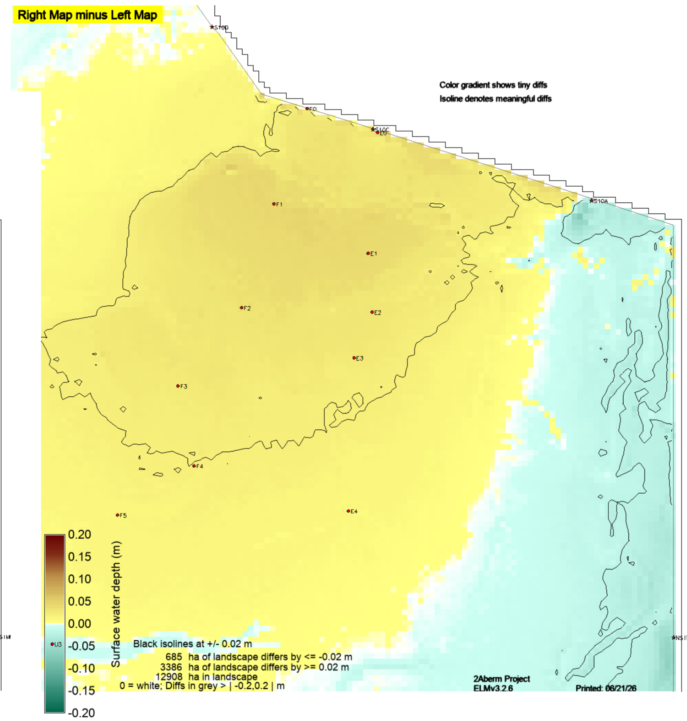


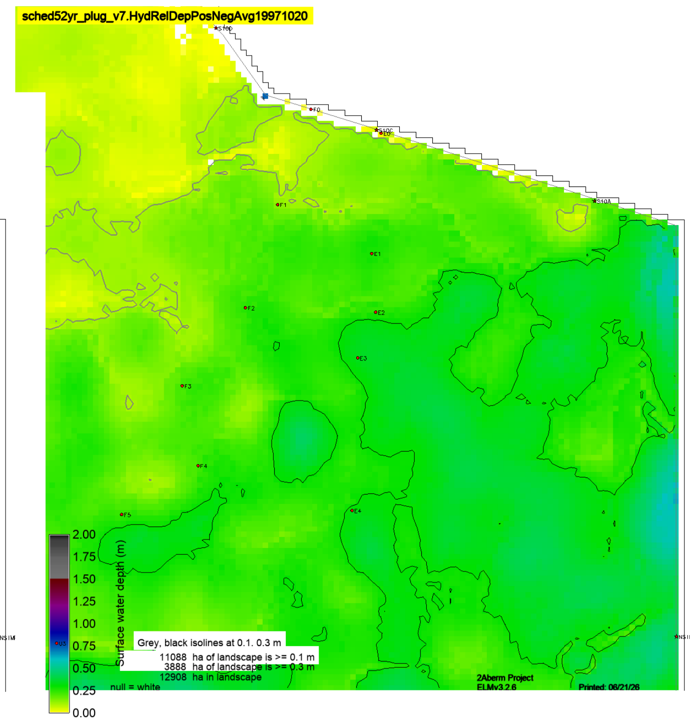
Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
F1
E1
F2
E2
E3
F3
F4
F5
E4
0.20
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.20
Surface water depth (m)
Black isolines at +/- 0.02 m
278 ha of landscape differs by <= -0.02 m
3507 ha of landscape differs by >= 0.02 m
12908 ha in landscape
0 = white; Diffs in grey > | -0.2,0.2 | m
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

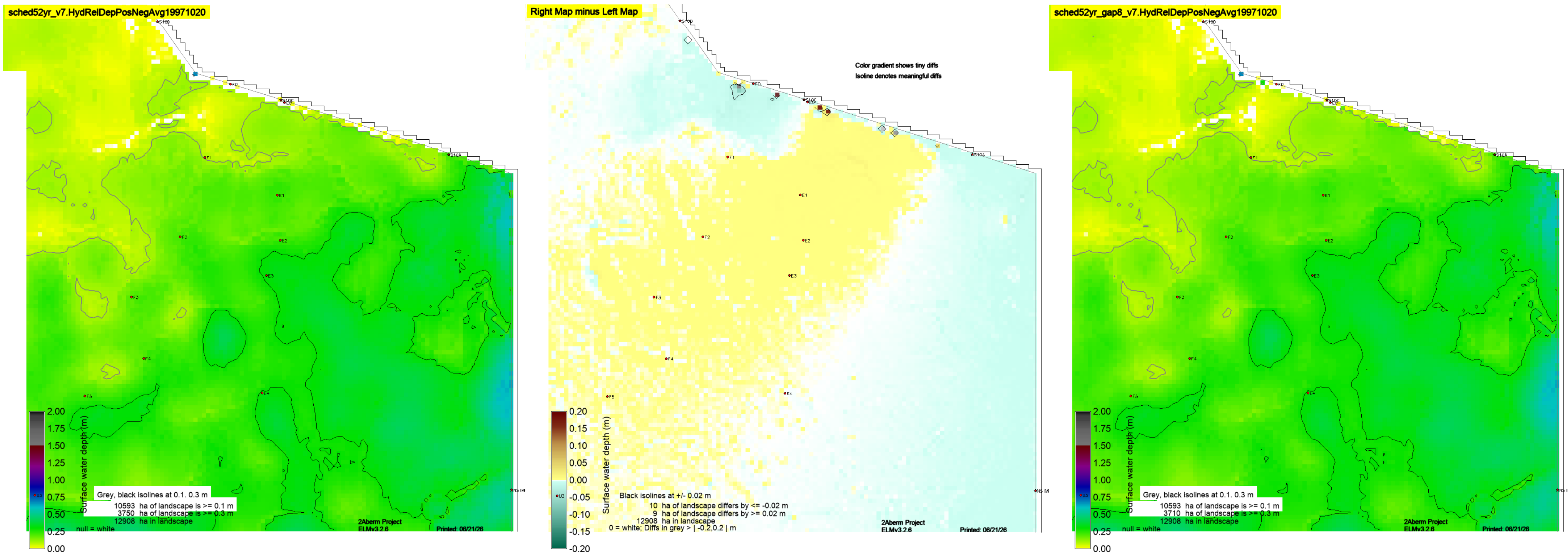


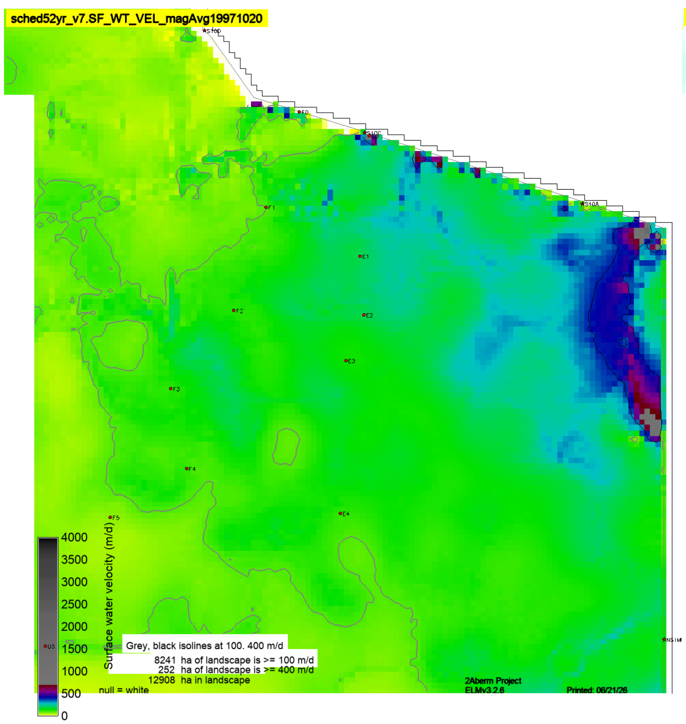
sched52yr_gap8_plug_v7.HydRelDepPosNegAvg19971020
F1
E1
F2
E2
E3
F3
F4
F5
E4
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Surface water depth (m)
Grey, black isolines at 0.1, 0.3 m
11026 ha of landscape is >= 0.1 m
3989 ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

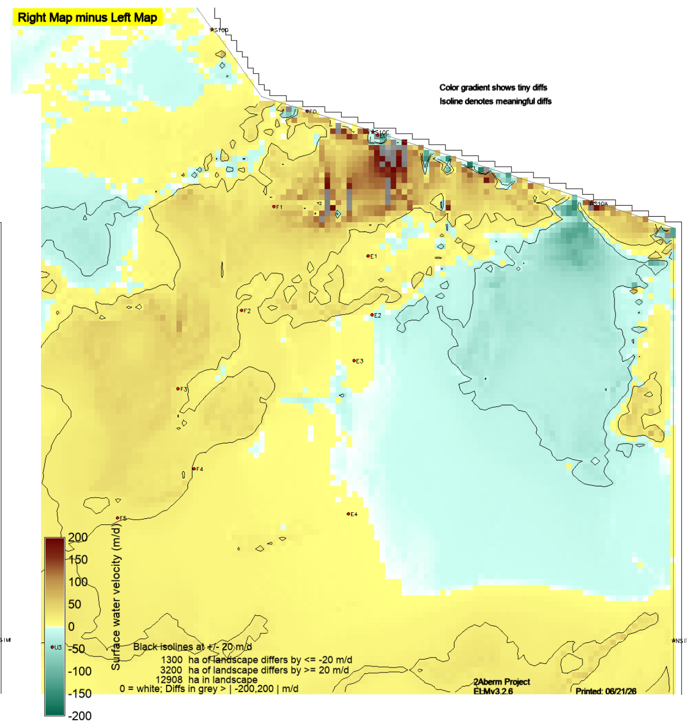

sched52yr_v7.HydRelDepPosNegAvg19971020
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Surface water depth (m)
Grey, black isolines at 0.1, 0.3 m
10593 ha of landscape is >= 0.1 m
3750 ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

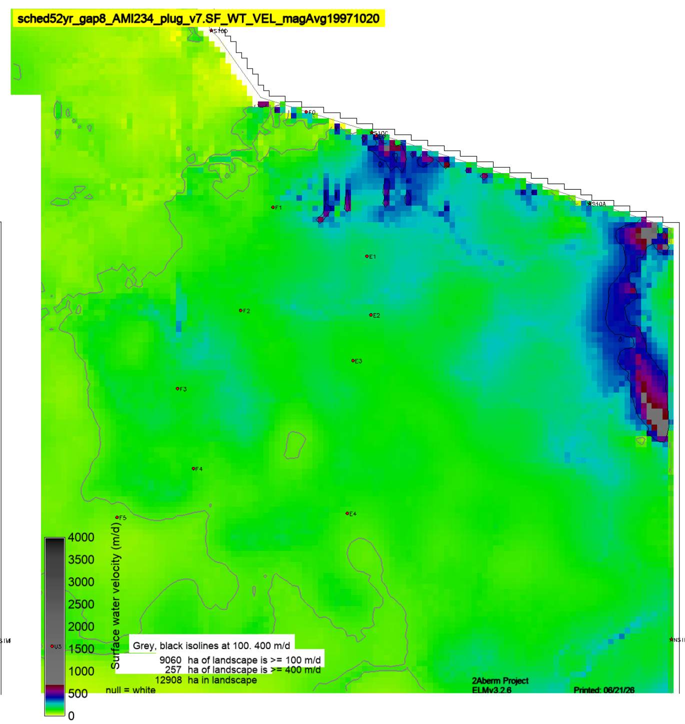

Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
0.20
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.20
Surface water depth (m)
Black isolines at +/- 0.02 m
685 ha of landscape differs by <= -0.02 m
3386 ha of landscape differs by >= 0.02 m
12908 ha in landscape
0 = white; Diffs in grey > | -0.2,0.2 | m
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

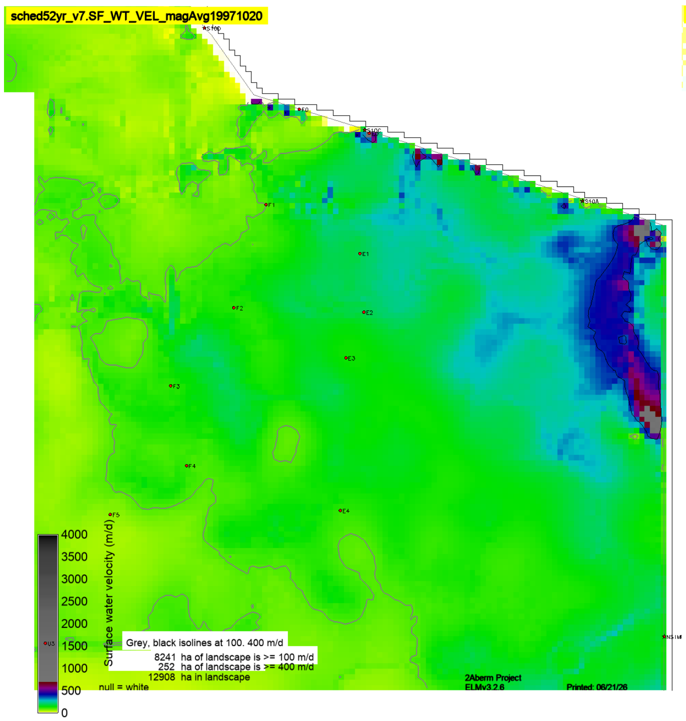

sched52yr_plug_v7.HydRelDepPosNegAvg19971020
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Surface water depth (m)
Grey, black isolines at 0.1, 0.3 m
11088 ha of landscape is >= 0.1 m
3888 ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

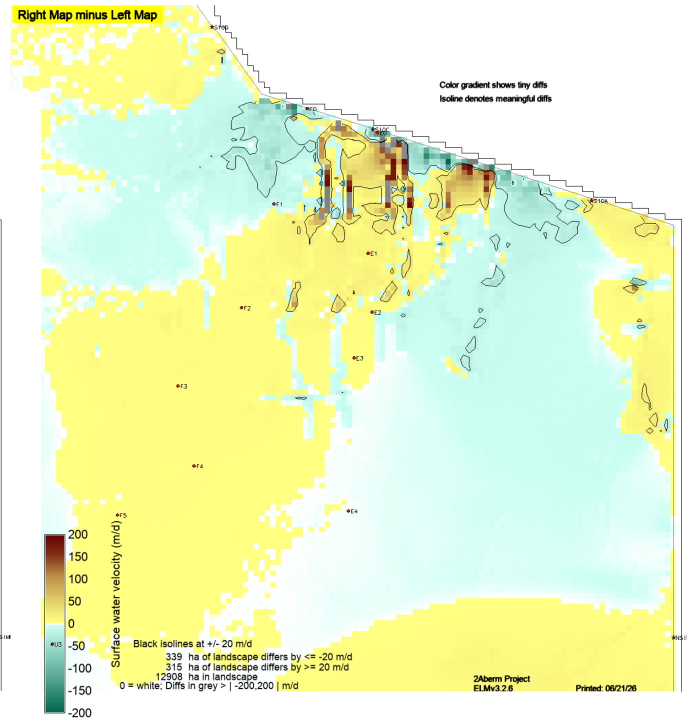

sched52yr_v7.HydRelDepPosNegAvg19971020
Surface water depth (m)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Grey, black isolines at 0.1, 0.3 m
10593 ha of landscape is >= 0.1 m
3750 ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26
Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Surface water depth (m)
0.20
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.20
Black isolines at +/- 0.02 m
10 ha of landscape differs by <= -0.02 m
9 ha of landscape differs by >= 0.02 m
12908 ha in landscape
0 = white; Diffs in grey > | -0.2,0.2 | m
2Aberm Project
ELMv3.2.6
Printed: 08/21/26
sched52yr_gap8_v7.HydRelDepPosNegAvg19971020
Surface water depth (m)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Grey, black isolines at 0.1, 0.3 m
10593 ha of landscape is >= 0.1 m
3710 ha of landscape is >= 0.3 m
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

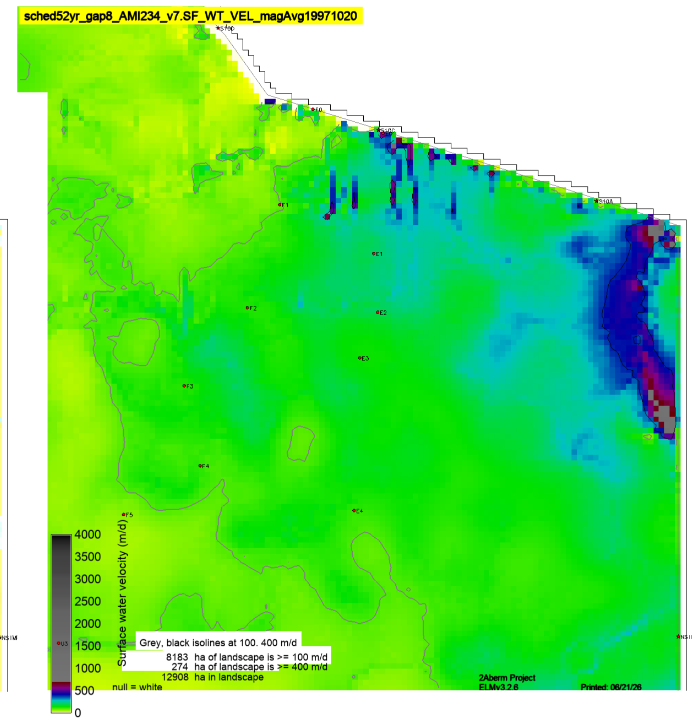

sched52yr_v7.SF_WT_VEL_magAvg19971020
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100. 400 m/d
8241 ha of landscape is >= 100 m/d
252 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

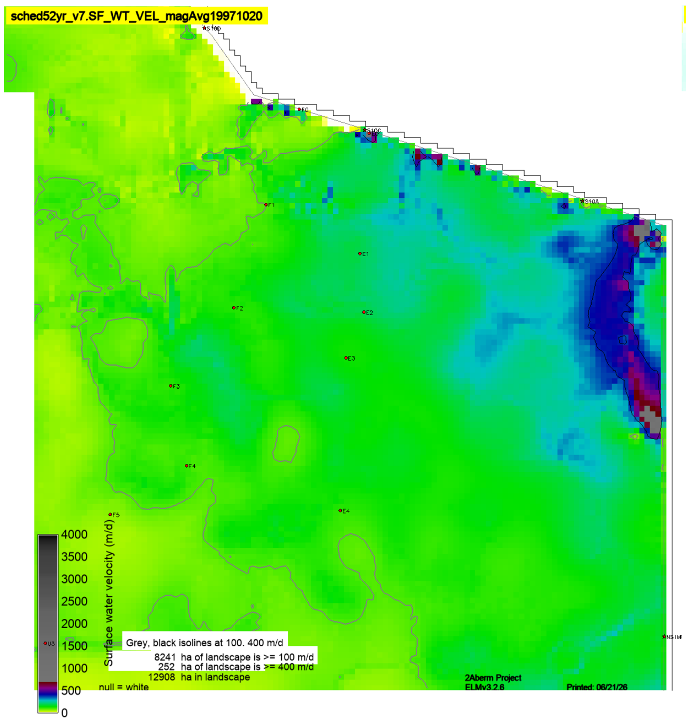

Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Surface water velocity (m/d)
200
150
100
50
0
-50
-100
-150
-200
Black isolines at +/- 20 m/d
1300 ha of landscape differs by <= -20 m/d
3200 ha of landscape differs by >= 20 m/d
12908 ha in landscape
0 = white; Diffs in grey > | -200,200 | m/d
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

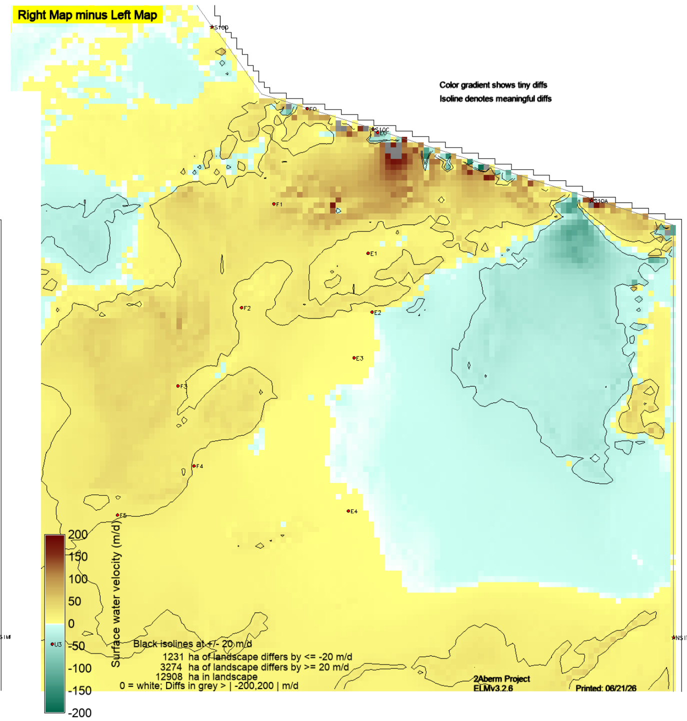

sched52yr_gap8_AMI234_plug_v7.SF_WT_VEL_magAvg19971020
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100. 400 m/d
9060 ha of landscape is >= 100 m/d
257 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

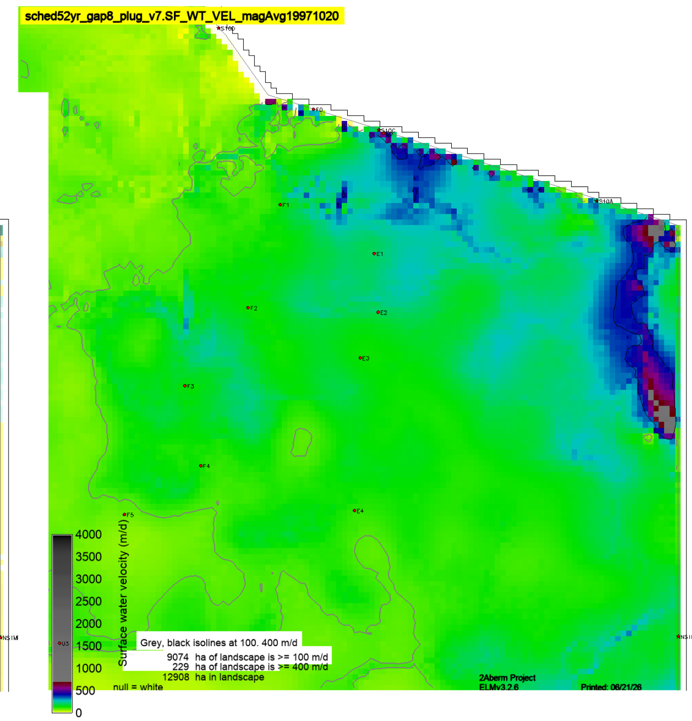

sched52yr_v7.SF_WT_VEL_magAvg19971020
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100. 400 m/d
8241 ha of landscape is >= 100 m/d
252 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

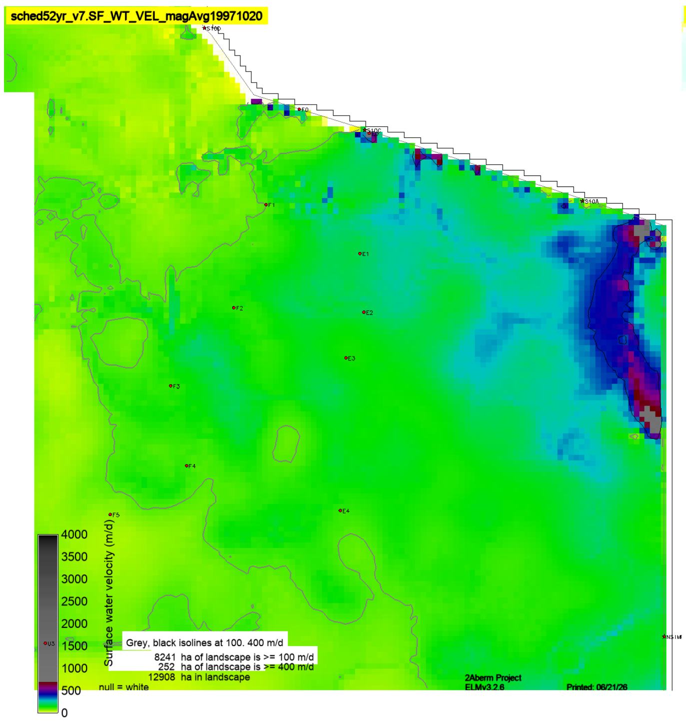

Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Surface water velocity (m/d)
200
150
100
50
0
-50
-100
-150
-200
Black isolines at +/- 20 m/d
339 ha of landscape differs by <= -20 m/d
315 ha of landscape differs by >= 20 m/d
12908 ha in landscape
0 = white; Diffs in grey > | -200,200 | m/d
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

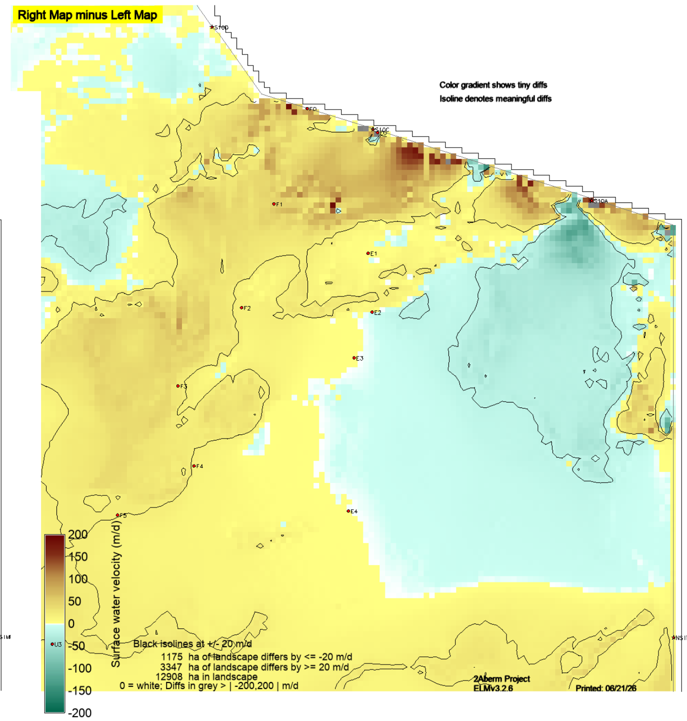

sched52yr_gap8_AMI234_v7.SF_WT_VEL_magAvg19971020
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100. 400 m/d
8183 ha of landscape is >= 100 m/d
274 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 08/21/26

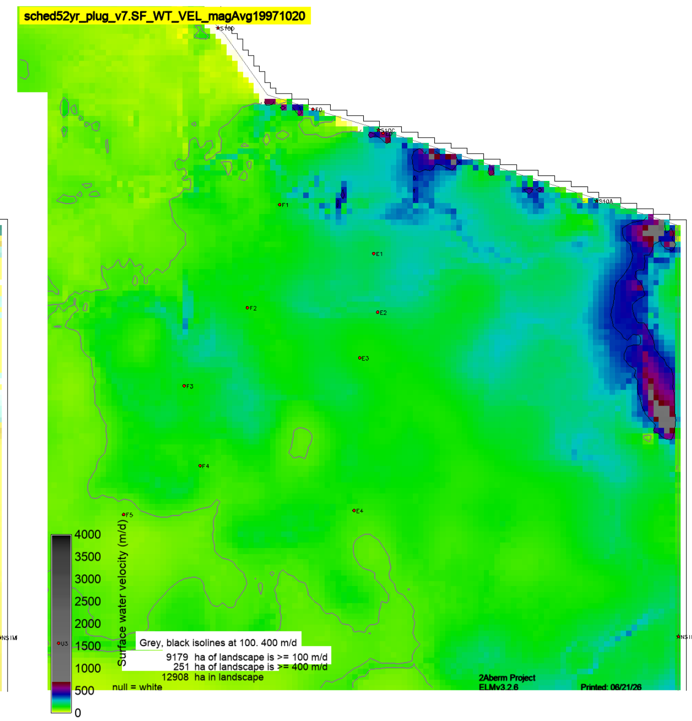

sched52yr_v7.SF_WT_VEL_magAvg19971020
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100. 400 m/d
8241 ha of landscape is >= 100 m/d
252 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

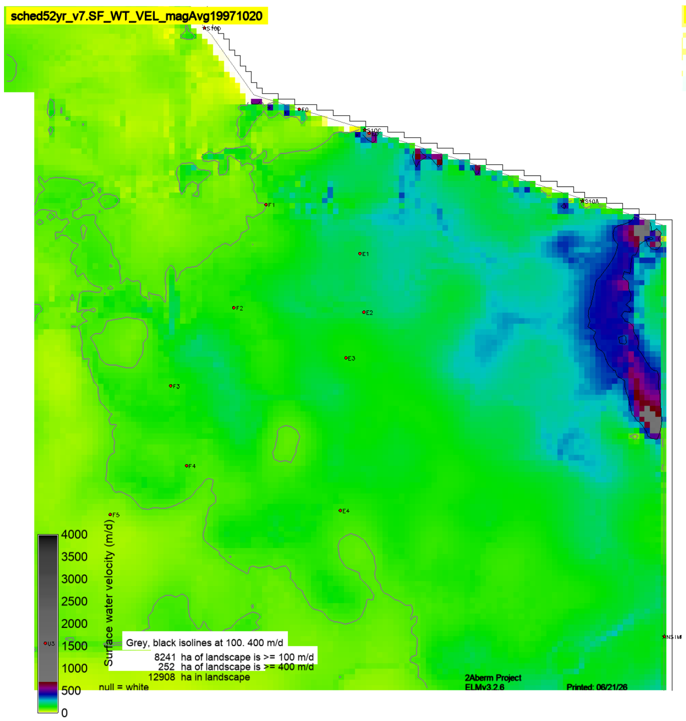

Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Surface water velocity (m/d)
200
150
100
50
0
-50
-100
-150
-200
Black isolines at +/- 20 m/d
1231 ha of landscape differs by <= -20 m/d
3274 ha of landscape differs by >= 20 m/d
12908 ha in landscape
0 = white; Diffs in grey > | -200,200 | m/d
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

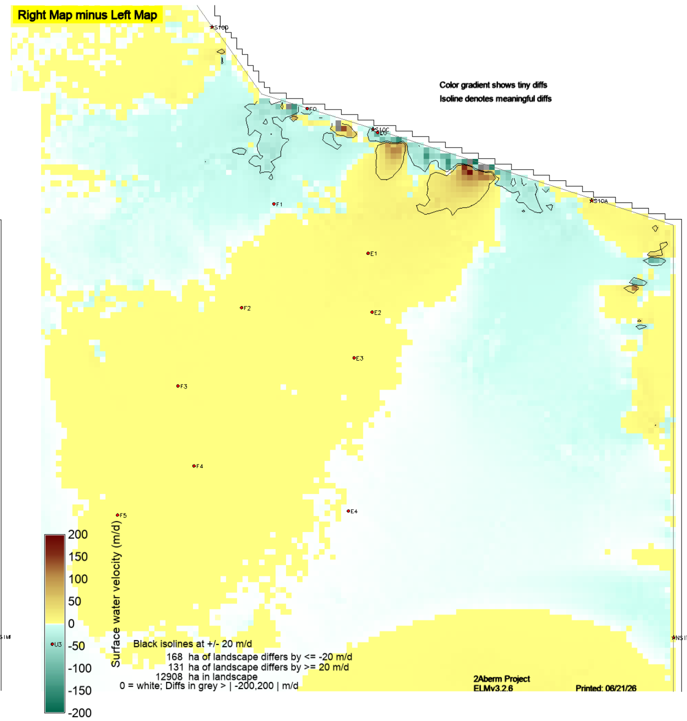

sched52yr_gap8_plug_v7.SF_WT_VEL_magAvg19971020
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100. 400 m/d
9074 ha of landscape is >= 100 m/d
229 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

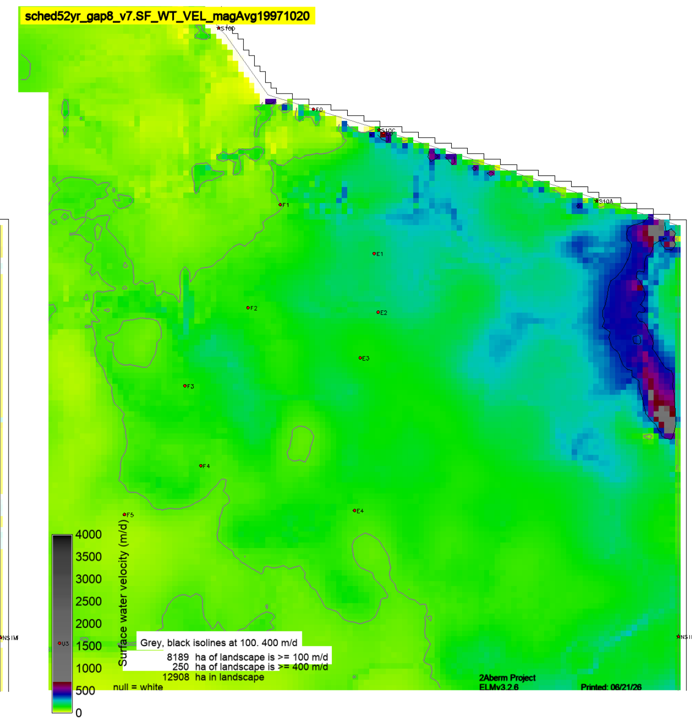

sched52yr_v7.SF_WT_VEL_magAvg19971020
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100. 400 m/d
8241 ha of landscape is >= 100 m/d
252 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

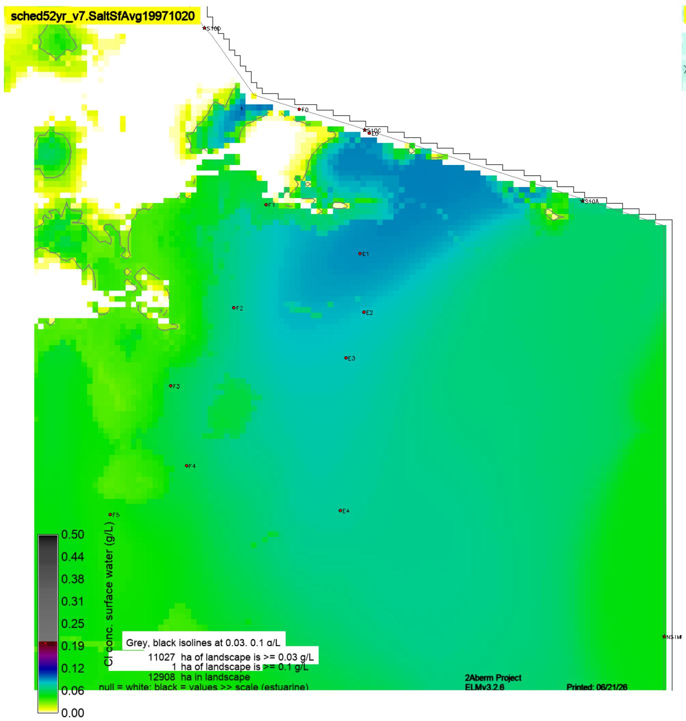

Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Surface water velocity (m/d)
200
150
100
50
0
-50
-100
-150
-200
Black isolines at +/- 20 m/d
1175 ha of landscape differs by <= -20 m/d
3347 ha of landscape differs by >= 20 m/d
12908 ha in landscape
0 = white; Diffs in grey > | -200,200 | m/d
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

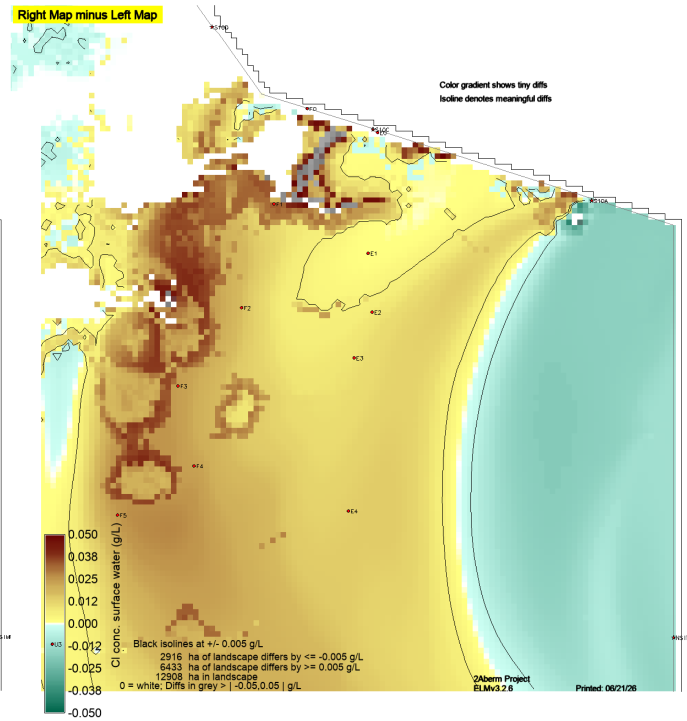

sched52yr_plug_v7.SF_WT_VEL_magAvg19971020
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100. 400 m/d
9179 ha of landscape is >= 100 m/d
251 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

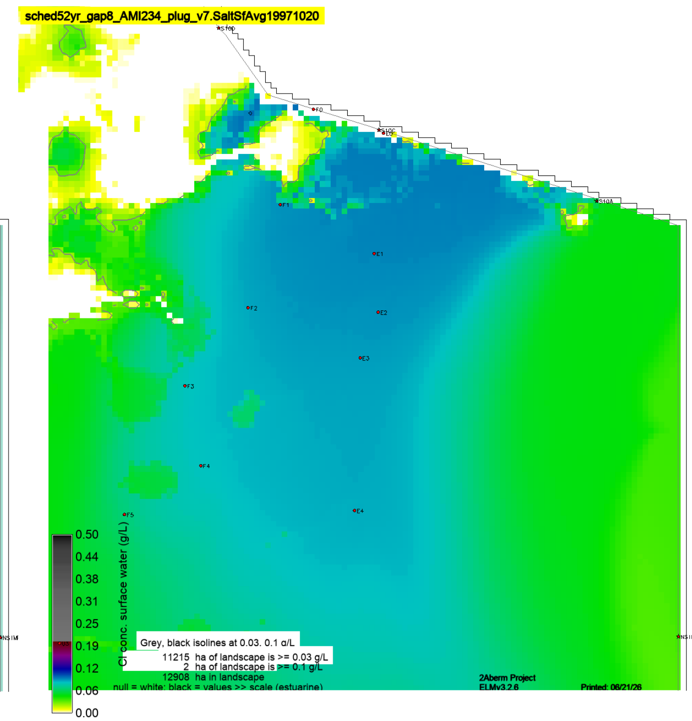

sched52yr_v7.SF_WT_VEL_magAvg19971020
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100. 400 m/d
8241 ha of landscape is >= 100 m/d
252 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

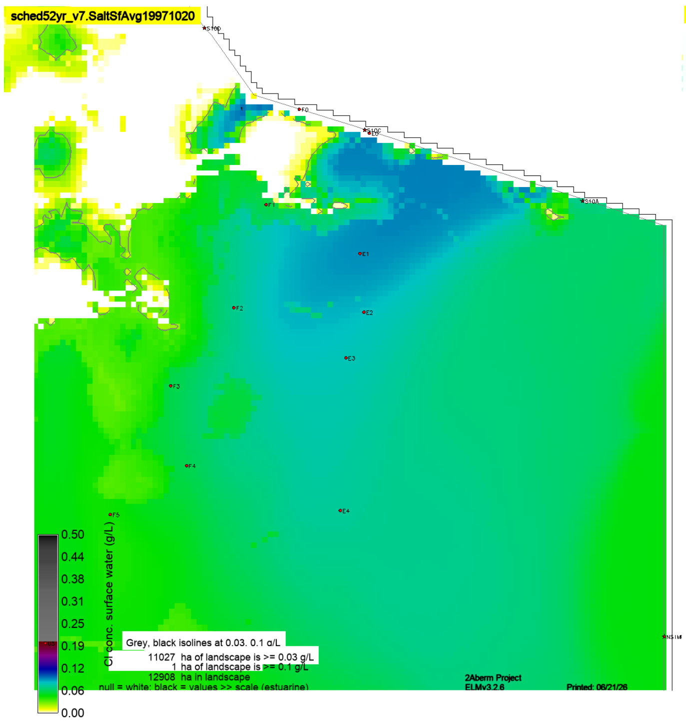

Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Surface water velocity (m/d)
200
150
100
50
0
-50
-100
-150
-200
Black isolines at +/- 20 m/d
168 ha of landscape differs by <= -20 m/d
131 ha of landscape differs by >= 20 m/d
12908 ha in landscape
0 = white; Diffs in grey > | -200,200 | m/d
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

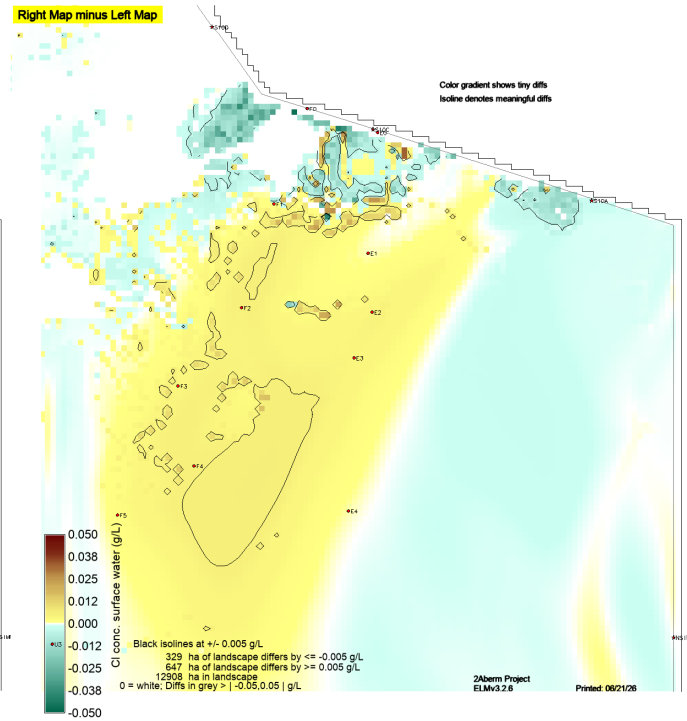

sched52yr_gap8_v7.SF_WT_VEL_magAvg19971020
Surface water velocity (m/d)
4000
3500
3000
2500
2000
1500
1000
500
0
Grey, black isolines at 100. 400 m/d
8189 ha of landscape is >= 100 m/d
250 ha of landscape is >= 400 m/d
12908 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

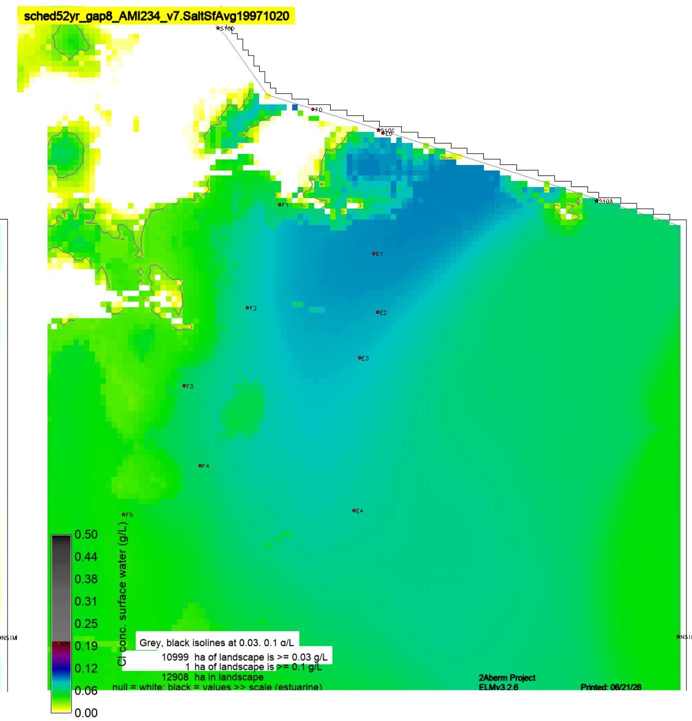

sched52yr_v7.SaltSfAvg19971020
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Cl conc. surface water (g/L)
Grey, black isolines at 0.03. 0.1 g/L
11027 ha of landscape is >= 0.03 g/L
1 ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white; black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

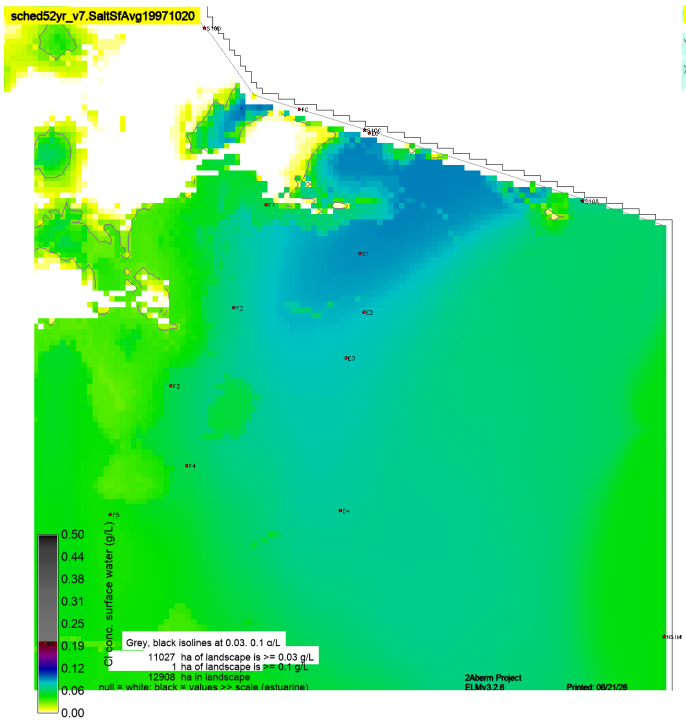

Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
0.050
0.038
0.025
0.012
0.000
-0.012
-0.025
-0.038
-0.050
Cl conc. surface water (g/L)
Black isolines at +/- 0.005 g/L
2916 ha of landscape differs by <= -0.005 g/L
6433 ha of landscape differs by >= 0.005 g/L
12908 ha in landscape
0 = white; Diffs in grey > | -0.05,0.05 | g/L
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

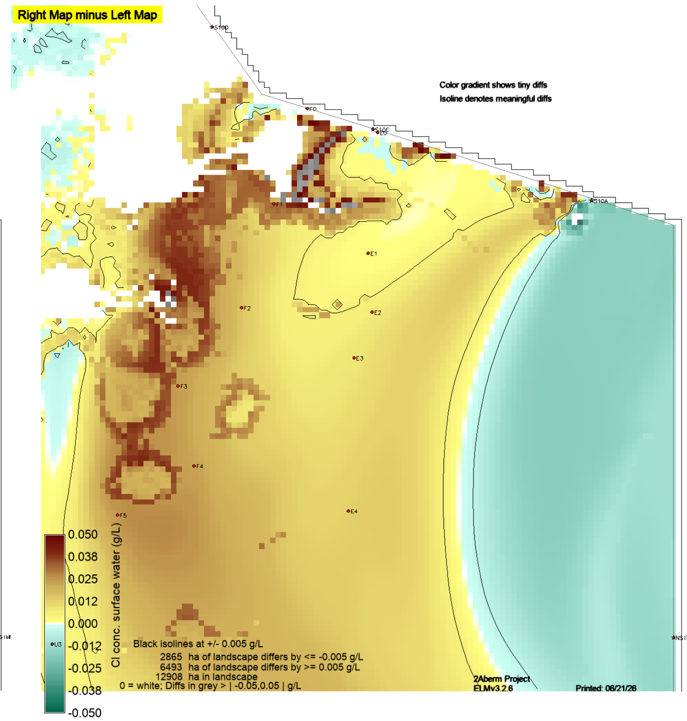

sched52yr_gap8_AMI234_plug_v7.SaltSfAvg19971020
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Cl conc. surface water (g/L)
Grey, black isolines at 0.03. 0.1 g/L
11215 ha of landscape is >= 0.03 g/L
2 ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white; black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

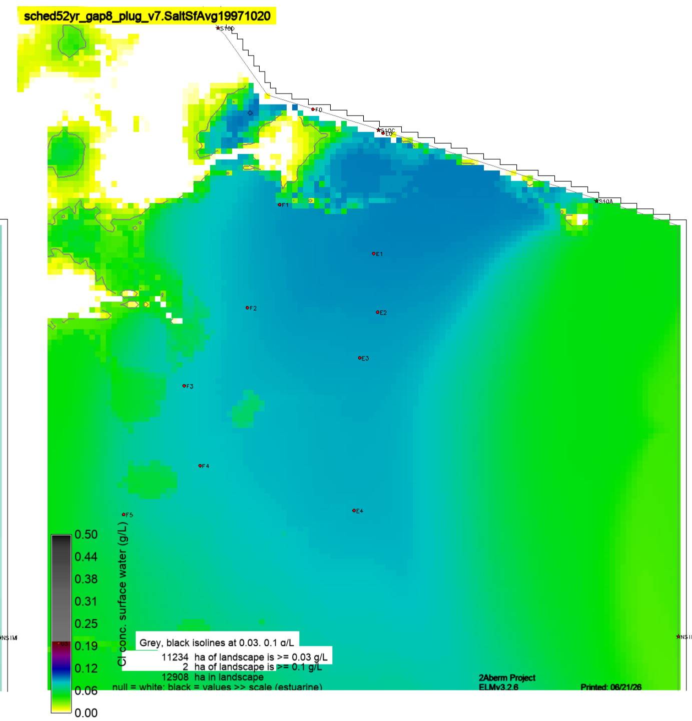

sched52yr_v7.SaltSfAvg19971020
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Cl conc. surface water (g/L)
Grey, black isolines at 0.03. 0.1 g/L
11027 ha of landscape is >= 0.03 g/L
1 ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white; black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

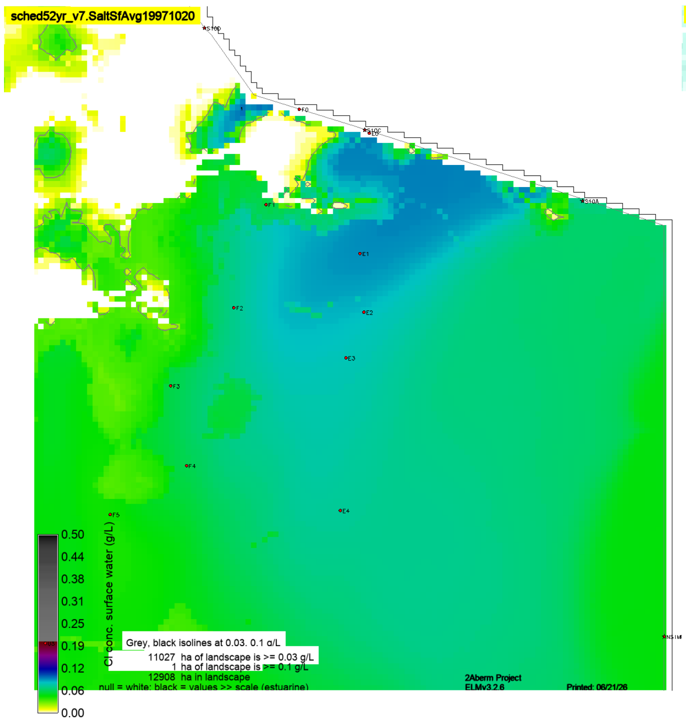

Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
0.050
0.038
0.025
0.012
0.000
-0.012
-0.025
-0.038
-0.050
Cl conc. surface water (g/L)
Black isolines at +/- 0.005 g/L
329 ha of landscape differs by <= -0.005 g/L
647 ha of landscape differs by >= 0.005 g/L
12908 ha in landscape
0 = white; Diffs in grey > | -0.05,0.05 | g/L
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

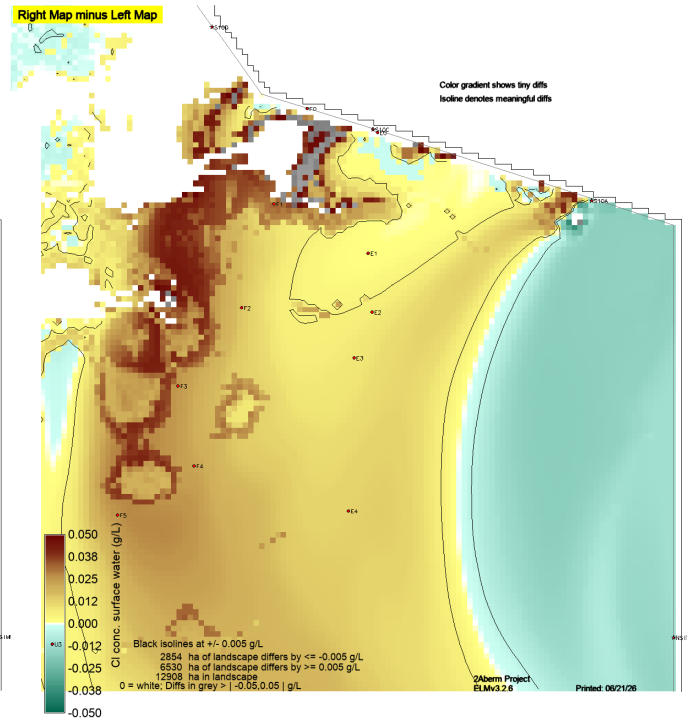

sched52yr_gap8_AMI234_v7.SaltSfAvg19971020
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Cl conc. surface water (g/L)
Grey, black isolines at 0.03. 0.1 g/L
10999 ha of landscape is >= 0.03 g/L
1 ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white; black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

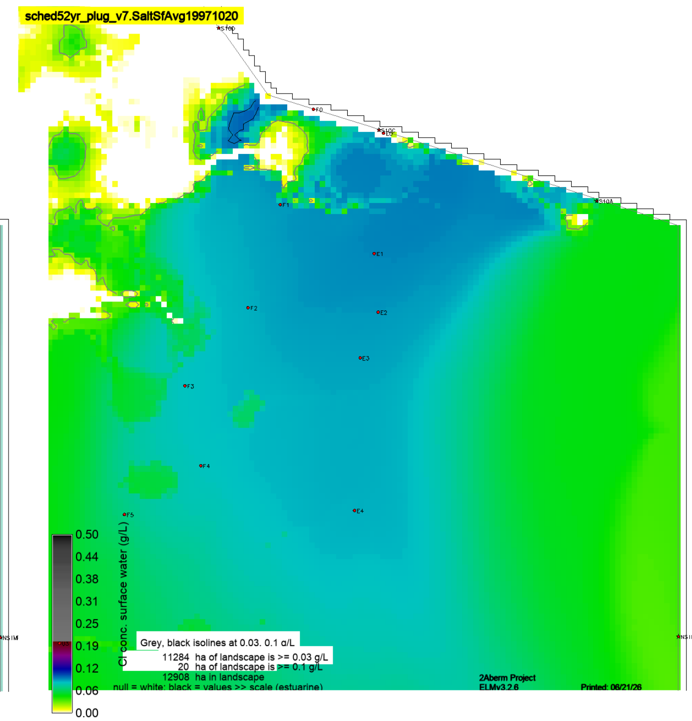

sched52yr_v7.SaltSfAvg19971020
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Cl conc. surface water (g/L)
Grey, black isolines at 0.03. 0.1 g/L
11027 ha of landscape is >= 0.03 g/L
1 ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white; black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

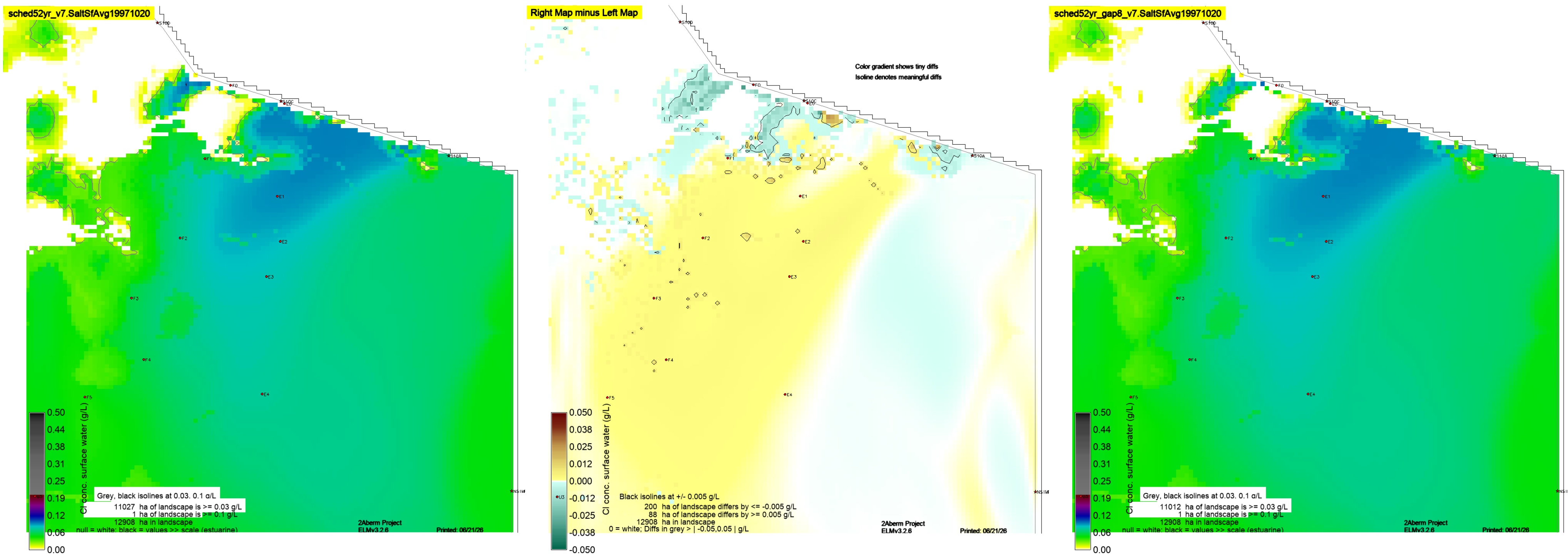

Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
0.050
0.038
0.025
0.012
0.000
-0.012
-0.025
-0.038
-0.050
Cl conc. surface water (g/L)
Black isolines at +/- 0.005 g/L
2865 ha of landscape differs by <= -0.005 g/L
6493 ha of landscape differs by >= 0.005 g/L
12908 ha in landscape
0 = white; Diffs in grey > | -0.05,0.05 | g/L
2Aberm Project
ELMv3.2.6
Printed: 06/21/26


sched52yr_gap8_plug_v7.SaltSfAvg19971020
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Cl conc. surface water (g/L)
Grey, black isolines at 0.03. 0.1 g/L
11234 ha of landscape is >= 0.03 g/L
2 ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white; black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26


sched52yr_v7.SaltSfAvg19971020
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Cl conc. surface water (g/L)
Grey, black isolines at 0.03. 0.1 g/L
11027 ha of landscape is >= 0.03 g/L
1 ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white; black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26


Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
0.050
0.038
0.025
0.012
0.000
-0.012
-0.025
-0.038
-0.050
Cl conc. surface water (g/L)
Black isolines at +/- 0.005 g/L
2854 ha of landscape differs by <= -0.005 g/L
6530 ha of landscape differs by >= 0.005 g/L
12908 ha in landscape
0 = white; Diffs in grey > | -0.05,0.05 | g/L
2Aberm Project
ELMv3.2.6
Printed: 06/21/26


sched52yr_plug_v7.SaltSfAvg19971020
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Cl conc. surface water (g/L)
Grey, black isolines at 0.03. 0.1 g/L
11284 ha of landscape is >= 0.03 g/L
20 ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white; black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26


sched52yr_v7.SaltSfAvg19971020
Cl conc. surface water (g/L)
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Grey, black isolines at 0.03. 0.1 g/L
11027 ha of landscape is >= 0.03 g/L
1 ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white; black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26
Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Cl conc. surface water (g/L)
0.050
0.038
0.025
0.012
0.000
-0.012
-0.025
-0.038
-0.050
Black isolines at +/- 0.005 g/L
200 ha of landscape differs by <= -0.005 g/L
88 ha of landscape differs by >= 0.005 g/L
12908 ha in landscape
0 = white; Diffs in grey > | -0.05,0.05 | g/L
2Aberm Project
ELMv3.2.6
Printed: 06/21/26
sched52yr_gap8_v7.SaltSfAvg19971020
Cl conc. surface water (g/L)
0.50
0.44
0.38
0.31
0.25
0.19
0.12
0.06
0.00
Grey, black isolines at 0.03. 0.1 g/L
11012 ha of landscape is >= 0.03 g/L
1 ha of landscape is >= 0.1 g/L
12908 ha in landscape
null = white; black = values >> scale (estuarine)
2Aberm Project
ELMv3.2.6
Printed: 06/21/26

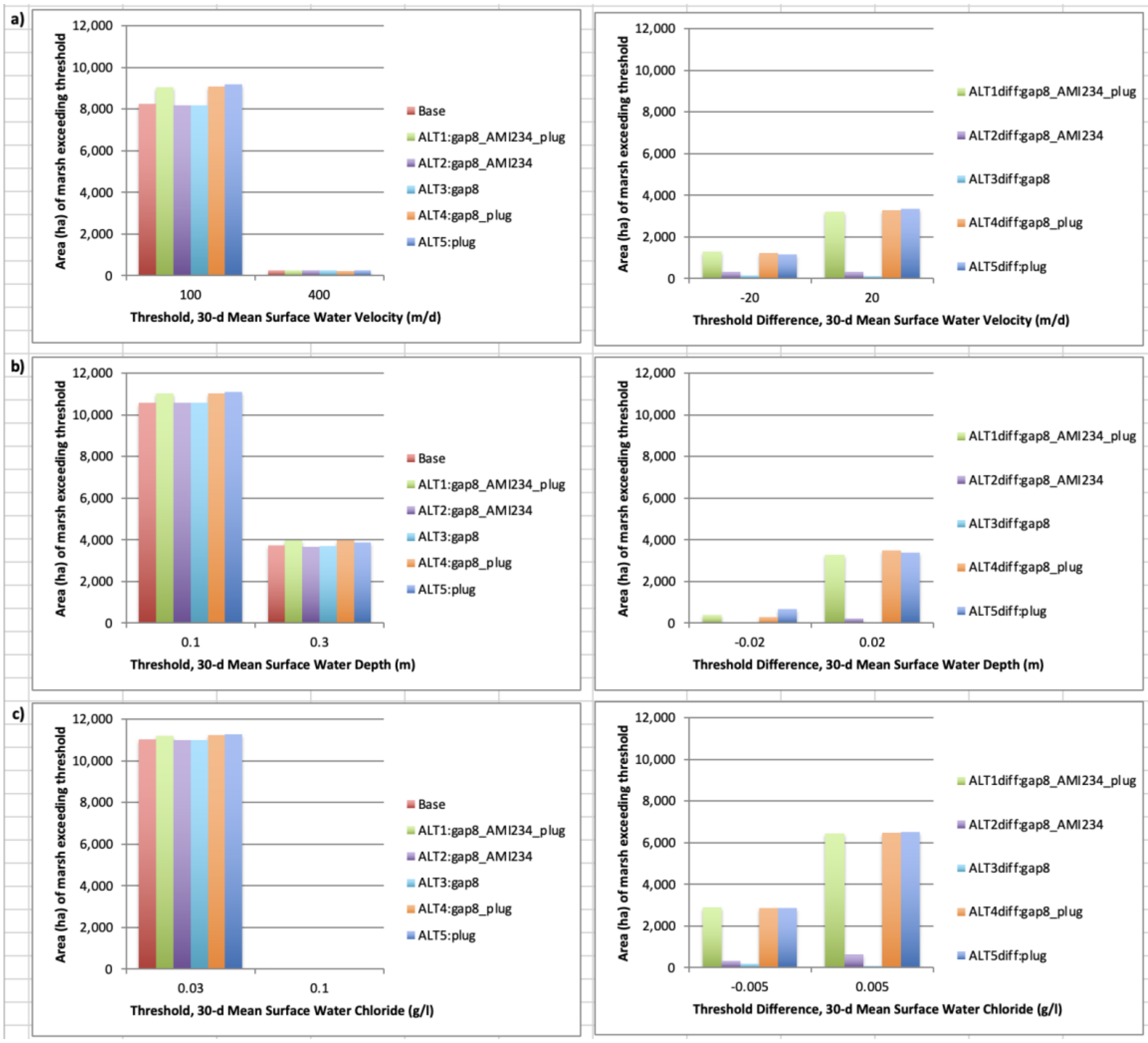


Figure sumMap7,8,9. NE berm subregion comparative bar graphs of contoured marsh areas shown in the above **Low Flow year 30-d mean** mapsets - for the a) velocity, b) depth, and c) chloride variables, all Base & Alternative scenarios.

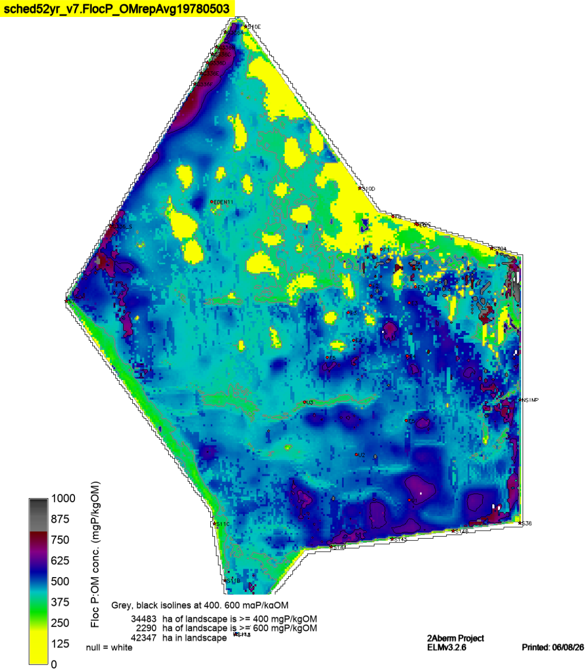
1.8.2 Difference Map results - Basin-wide region

As indicated in the **Introduction**, our Project goals focus on improved water flows and depths in the (currently degraded) northeast region of WCA-2A. Beyond that more "localized" focus, we evaluated the broader effects that Alternative scenarios may have on the entire WCA-2A basin. This ***section quantifies such broader-scale hydro-ecological responses to Alternative scenarios, with an emphasis on any potential P eutrophication***.

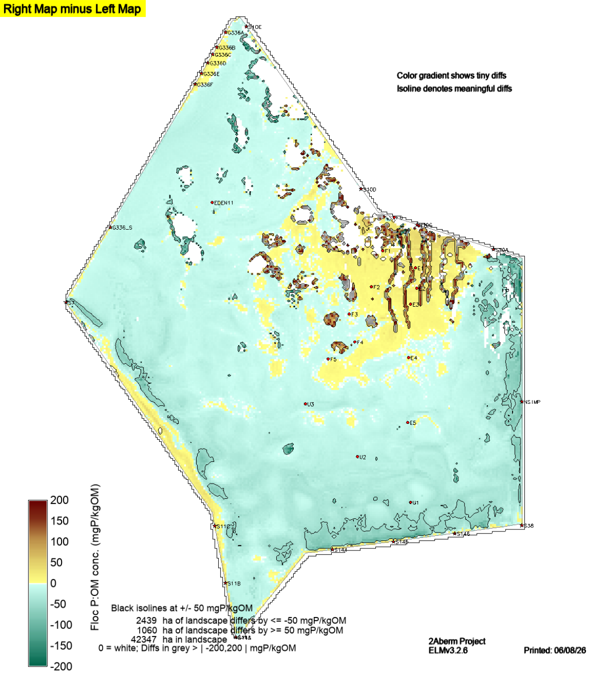
1.8.2.1 Basin-wide region: Phosphorus, High-flow-year, dry-season

- ***Floc_P_OM*** - Following 5 Figure pages= Figure Map10 (5 scenario pages for each variable's Figure Map).
- Bullets below are **overview difference map "pattern judgment" summaries** of results in the below 5 Map Figures:
    - **Phosphorus (P) concentration in the highly labile, dynamic floc layer above the soil is a very useful "fast" variable for understanding temporal changes in potential eutrophication**. Surface water P concentration is routinely monitored, but extremely rapid (ca. minutes-hours) removal of surface water P by the periphyton community makes it less useful to show actual eutrophication.
    - These high-flow-dry-season 30-d mean floc P snapshot results **capture the highest potential levels of P eutrophication in the short term**, and thus are not necessarily characteristic of P impacts over longer periods.
    - Gaps: little to no floc P change in the basin
    - Plug: some low level increase in floc P, in a moderately large area in the NEberm; small "pockets" of moderately high increase in floc P, mostly close to the berm
        - meaningful reduction in floc P along eastern boundary (and slight reduction in lower basin region)
    - Gaps&Plug: no meaningful differences from Plug-only
    - AMI&Gaps: meaningful increase in floc P, restricted to the AMI sloughs;
        - relative to Plug (and Gaps&Plug), less area overall of increased floc P
    - AMI&Gaps&Plug: meaningful increase in floc P, restricted to the AMI sloughs; some low level increase in floc P in moderately large area in the NEberm;
        - relative to Plug (and Gaps&Plug), slightly more area overall of increased floc P
        - meaningful reduction in floc P along eastern boundary (and slight reduction in lower basin region)

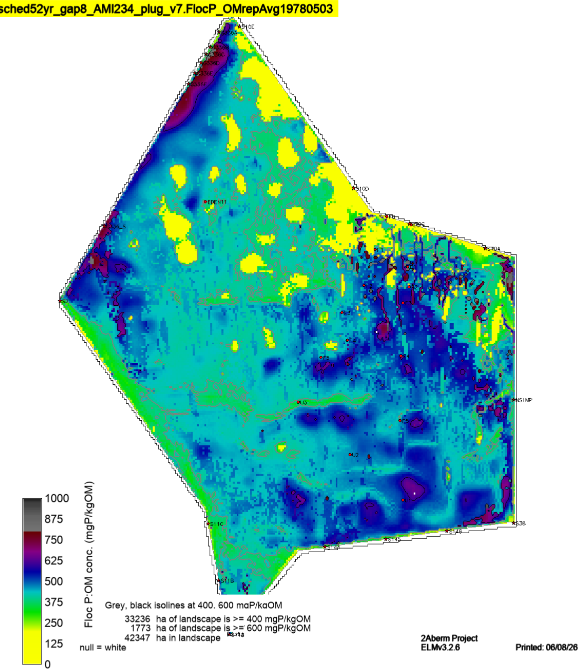
sched52yr_v7.FlocP_OMrepAvg19780503

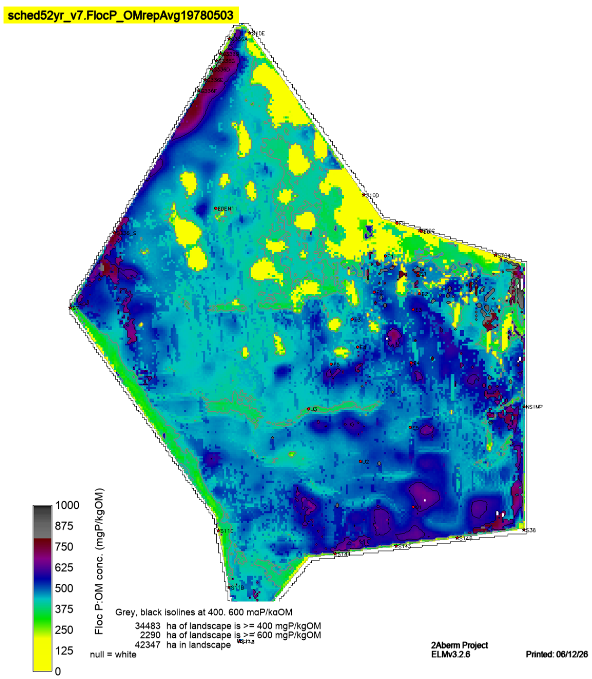


Right Map minus Left Map

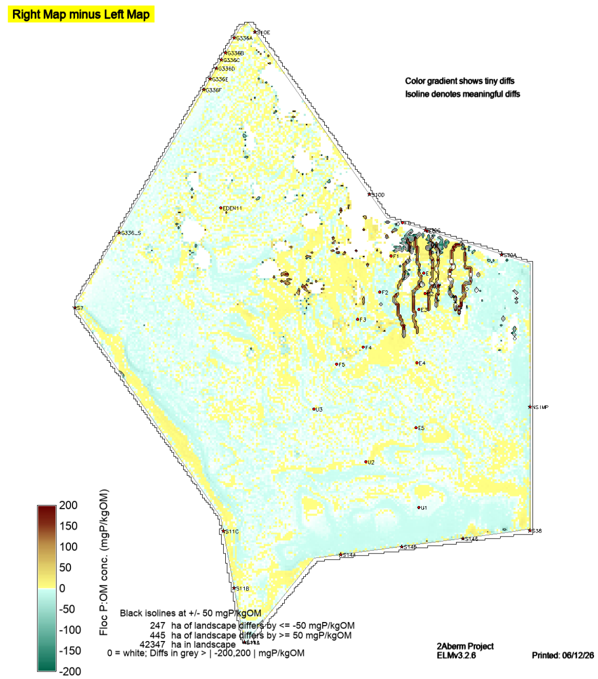


sched52yr_gap8_AMI234_plug_v7.FlocP_OMrepAvg19780503

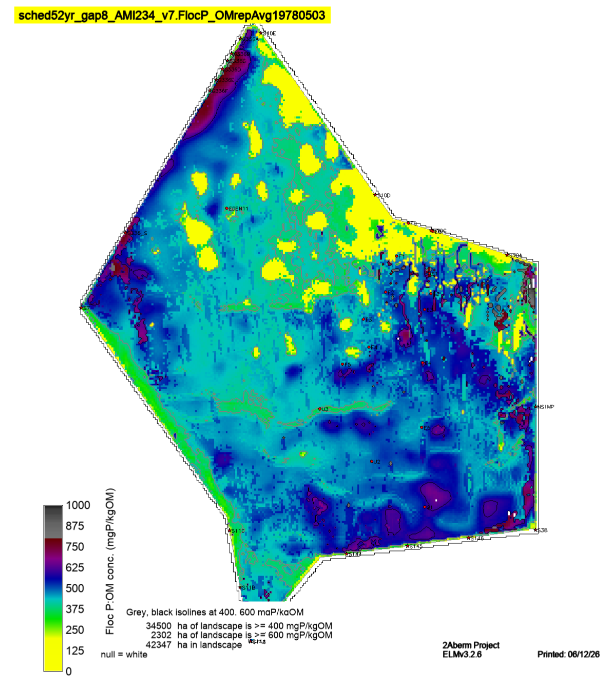




sched52yr_v7.FlocP_OMrepAvg19780503
Floc P:OM conc. (mgP/kgOM)
1000
875
750
625
500
375
250
125
0
Grey, black isolines at 400. 600 mgP/kgOM
34483 ha of landscape is >= 400 mgP/kgOM
2290 ha of landscape is >= 600 mgP/kgOM
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/12/26

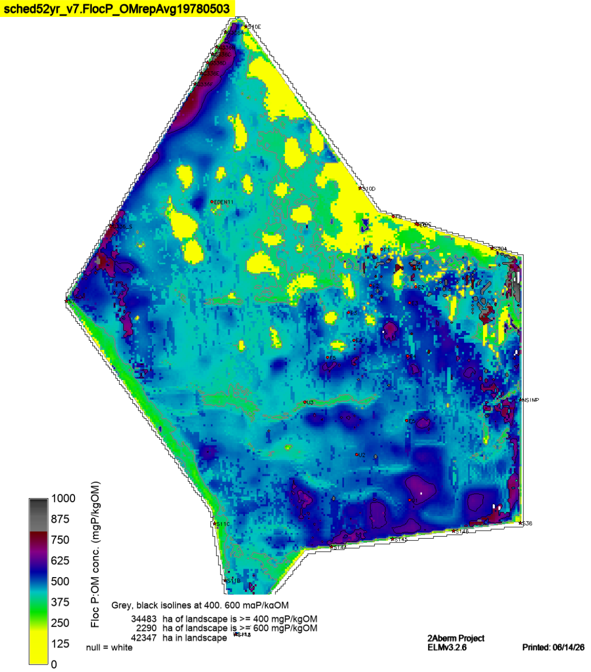


Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Floc P:OM conc. (mgP/kgOM)
200
150
100
50
0
-50
-100
-150
-200
Black isolines at +/- 50 mgP/kgOM
247 ha of landscape differs by <= -50 mgP/kgOM
445 ha of landscape differs by >= 50 mgP/kgOM
42347 ha in landscape
0 = white; Diffs in grey > | -200,200 | mgP/kgOM
2Aberm Project
ELMv3.2.6
Printed: 06/12/26

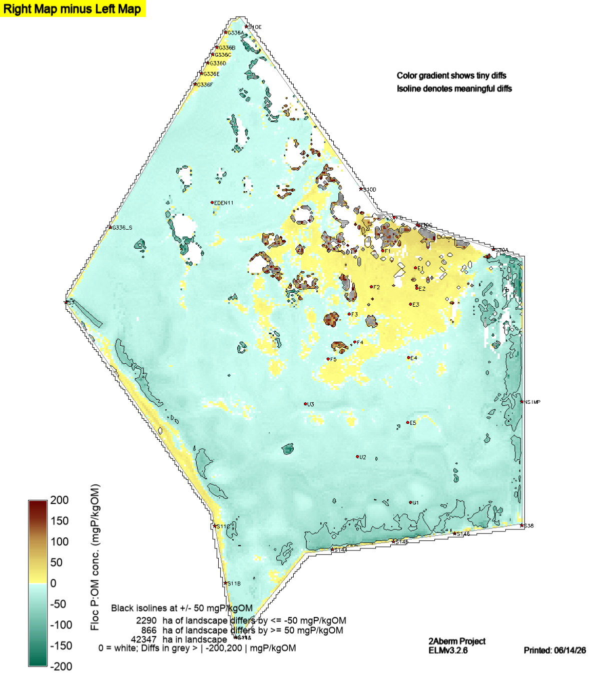


sched52yr_gap8_AMI234_v7.FlocP_OMrepAvg19780503
Floc P:OM conc. (mgP/kgOM)
1000
875
750
625
500
375
250
125
0
Grey, black isolines at 400. 600 mgP/kgOM
34500 ha of landscape is >= 400 mgP/kgOM
2302 ha of landscape is >= 600 mgP/kgOM
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/12/26

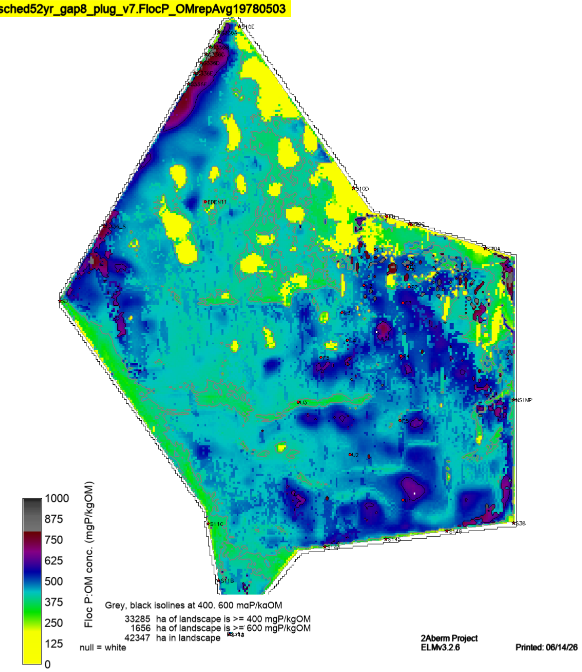
sched52yr_v7.FlocP_OMrepAvg19780503

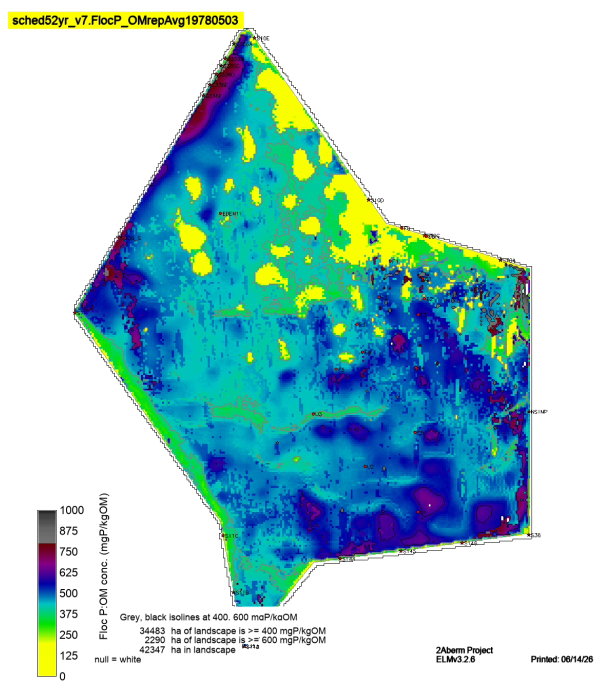


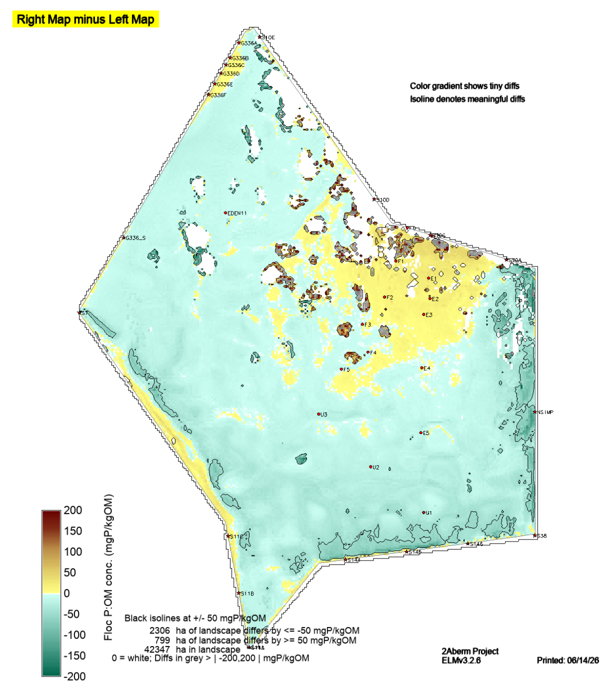
Right Map minus Left Map

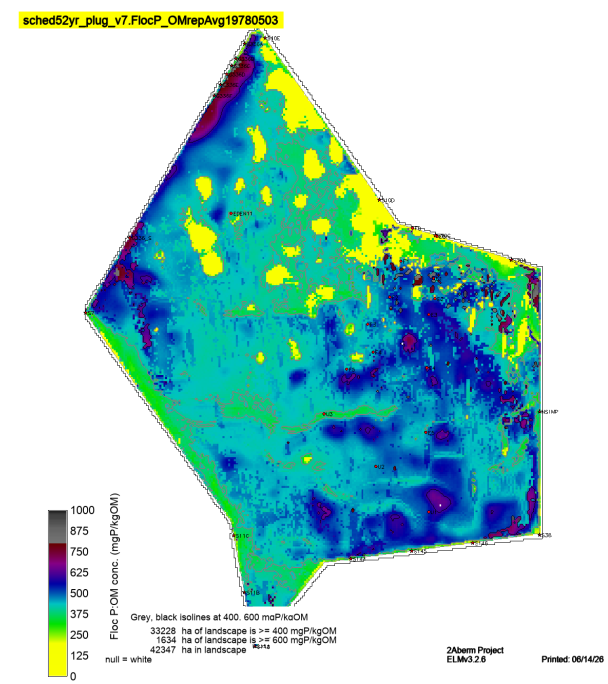


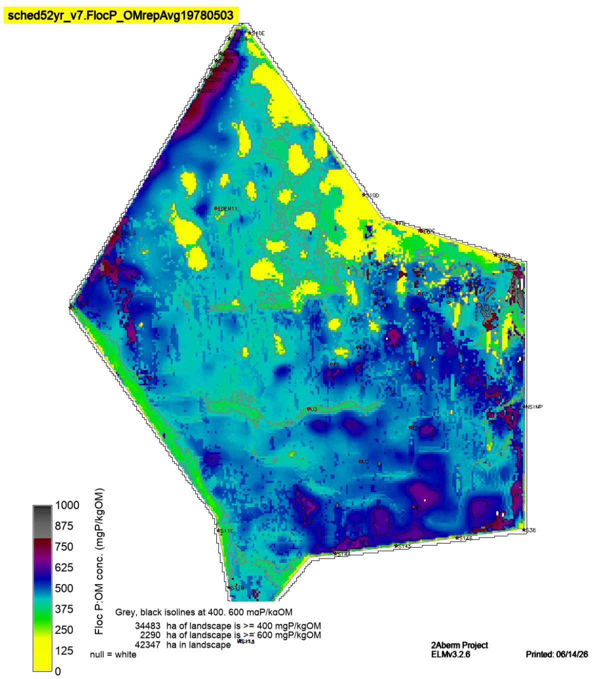
sched52yr_gap8_plug_v7.FlocP_OMrepAvg19780503

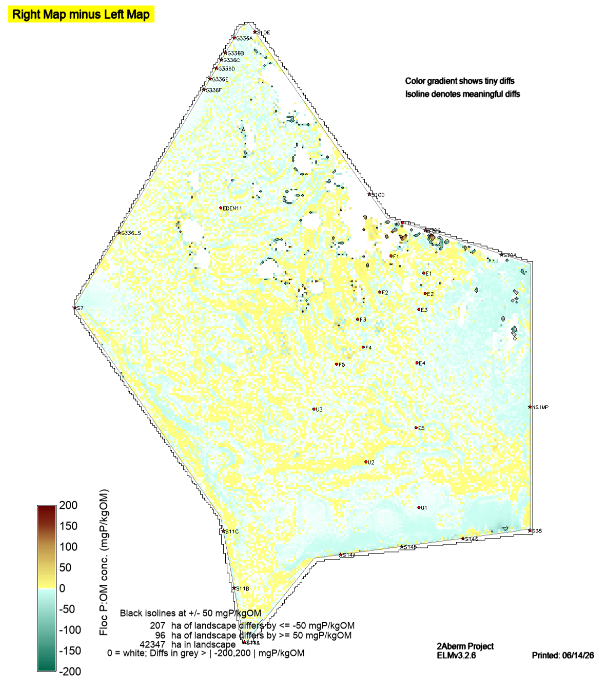


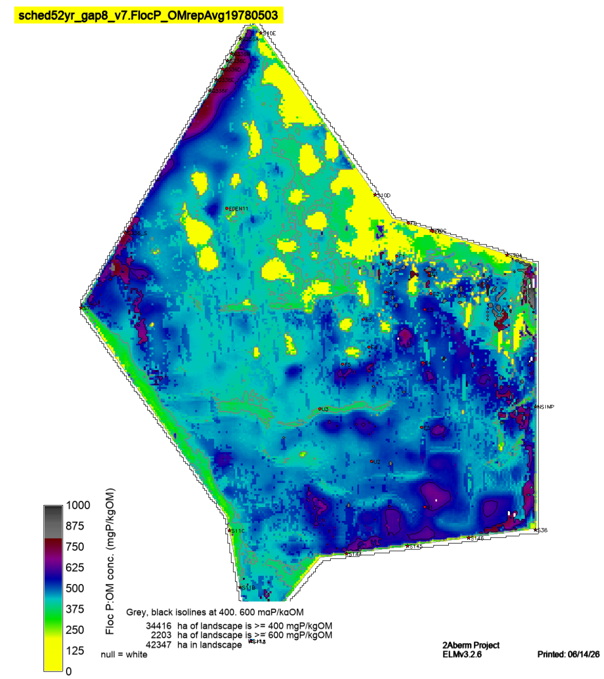

sched52yr_v7.FlocP_OMrepAvg19780503
1000
875
750
625
500
375
250
125
0
Floc P:OM conc. (mgP/kgOM)
Grey, black isolines at 400. 600 mgP/kgOM
34483 ha of landscape is >= 400 mgP/kgOM
2290 ha of landscape is >= 600 mgP/kgOM
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/14/26


Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
200
150
100
50
0
-50
-100
-150
-200
Floc P:OM conc. (mgP/kgOM)
Black isolines at +/- 50 mgP/kgOM
2306 ha of landscape differs by <= -50 mgP/kgOM
799 ha of landscape differs by >= 50 mgP/kgOM
42347 ha in landscape
0 = white; Diffs in grey > | -200,200 | mgP/kgOM
2Aberm Project
ELMv3.2.6
Printed: 06/14/26


sched52yr_plug_v7.FlocP_OMrepAvg19780503
1000
875
750
625
500
375
250
125
0
Floc P:OM conc. (mgP/kgOM)
Grey, black isolines at 400. 600 mgP/kgOM
33228 ha of landscape is >= 400 mgP/kgOM
1634 ha of landscape is >= 600 mgP/kgOM
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/14/26

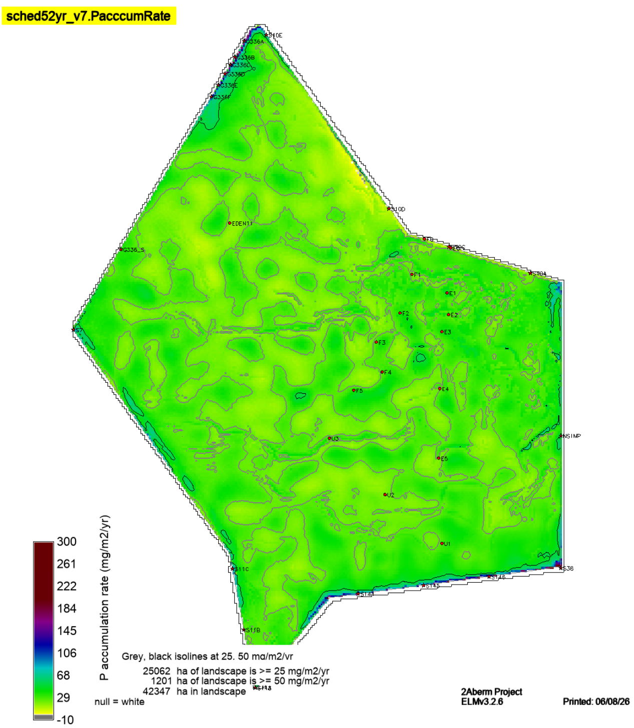

sched52yr_v7.FlocP_OMrepAvg19780503
Floc P:OM conc. (mgP/kgOM)
1000
875
750
625
500
375
250
125
0
Grey, black isolines at 400, 600 mgP/kgOM
34483 ha of landscape is >= 400 mgP/kgOM
2290 ha of landscape is >= 600 mgP/kgOM
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/14/26


Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
Floc P:OM conc. (mgP/kgOM)
200
150
100
50
0
-50
-100
-150
-200
Black isolines at +/- 50 mgP/kgOM
207 ha of landscape differs by <= -50 mgP/kgOM
96 ha of landscape differs by >= 50 mgP/kgOM
42347 ha in landscape
0 = white; Diffs in grey > | -200,200 | mgP/kgOM
2Aberm Project
ELMv3.2.6
Printed: 06/14/26

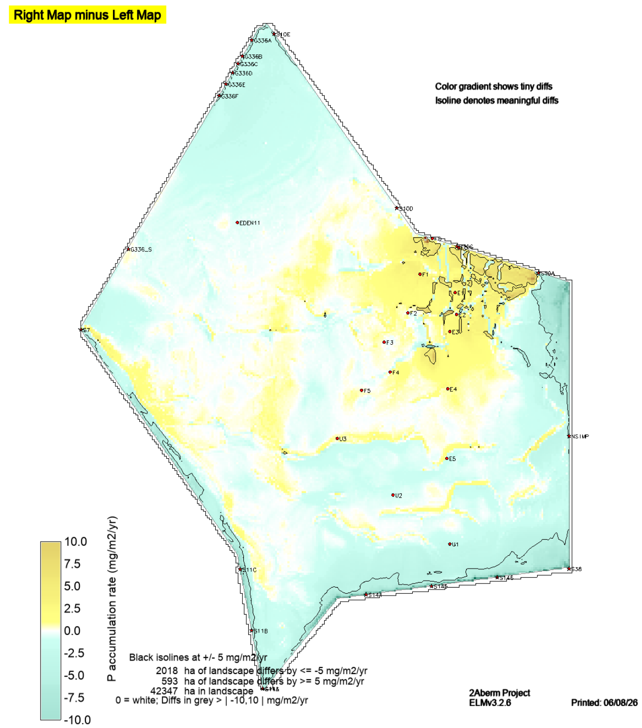

sched52yr_gap8_v7.FlocP_OMrepAvg19780503
Floc P:OM conc. (mgP/kgOM)
1000
875
750
625
500
375
250
125
0
Grey, black isolines at 400, 600 mgP/kgOM
34416 ha of landscape is >= 400 mgP/kgOM
2203 ha of landscape is >= 600 mgP/kgOM
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/14/26

1.8.2.2 Basin-wide region: Phosphorus, POS rate

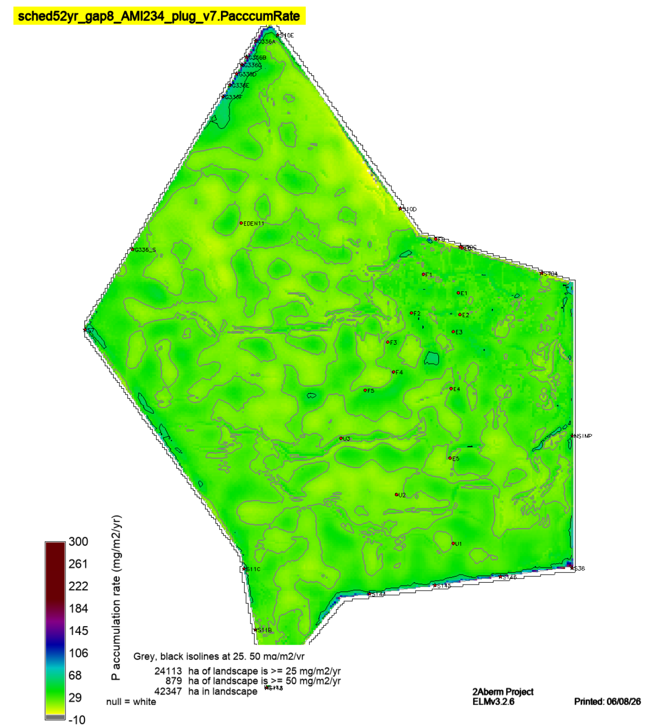
- ***P accumulation rate*** - Following 5 Figure pages= Figures Map11 (5 scenario pages for each variable's Figure Map).
- Bullets below are **difference map "pattern judgment" summaries** of results in the below 5 Map Figures:
    - **Phosphorus (P) accumulation in the complete ecosystem (including but not limited to soil) is a very useful, fully integrative model variable for understanding long term changes in eutrophication**. The related soil P concentration is occasionally monitored, but is only one part of the system's total P mass.
    - Gaps: little to no P accumulation change in the basin
    - Plug: meaningful increase in P accumulation, in a small area in the NEberm
        - meaningful decrease in P accumulation in a similarly-small area along eastern boundary
    - Gaps&Plug: no meaningful differences from Plug-only
    - AMI&Gaps: meaningful decrease in P accumulation, restricted to only some portions of the AMI sloughs;
        - relative to Plug (and Gaps&Plug), very little area overall of marginal, spatially variable, increases & decreases P accumulation
    - AMI&Gaps&Plug: meaningful increase in P accumulation, restricted to a small area in the NEberm
        - meaningful decrease in P accumulation in a similarly-small area along eastern boundary
        - spatially variable decreases in some portions of the AMI sloughs, within a NEberm area of spatially-varying ± P accumulation responses



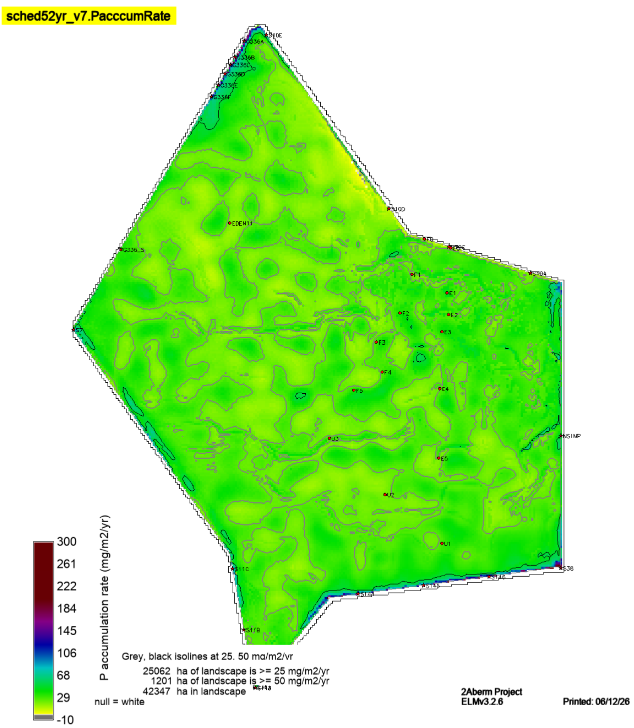
sched52yr_v7.PaccumRate
P accumulation rate (mg/m2/yr)
300
261
222
184
145
106
68
29
-10
Grey, black isolines at 25. 50 mg/m2/yr
25062 ha of landscape is >= 25 mg/m2/yr
1201 ha of landscape is >= 50 mg/m2/yr
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/08/26

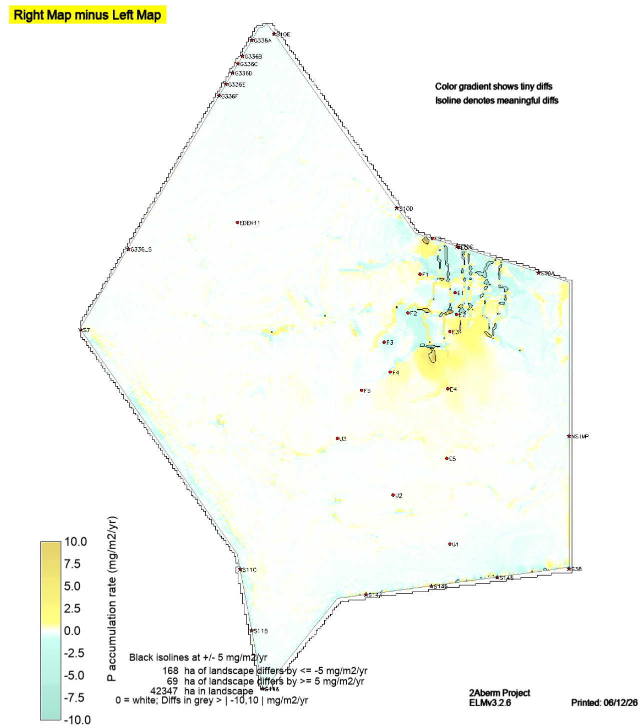


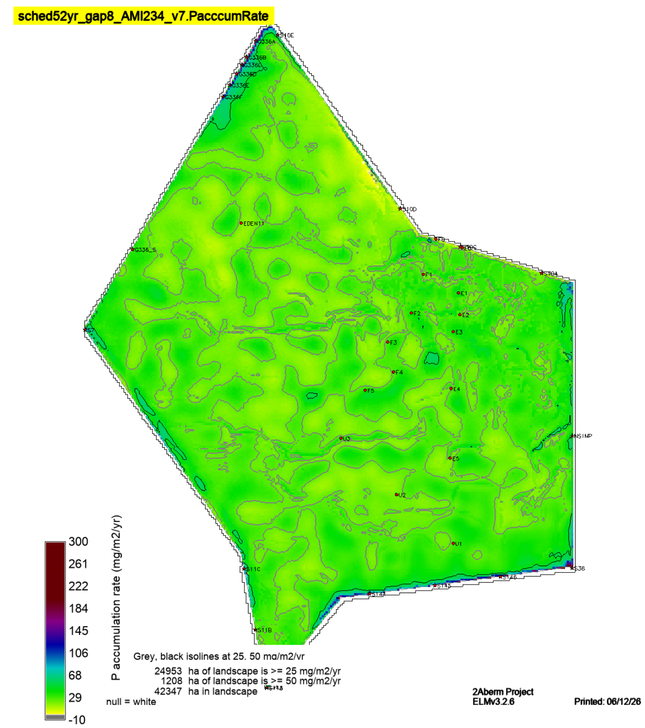
Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
P accumulation rate (mg/m2/yr)
10.0
7.5
5.0
2.5
0.0
-2.5
-5.0
-7.5
-10.0
Black isolines at +/- 5 mg/m2/yr
2018 ha of landscape differs by <= -5 mg/m2/yr
593 ha of landscape differs by >= 5 mg/m2/yr
42347 ha in landscape
0 = white; Diffs in grey > | -10,10 | mg/m2/yr
2Aberm Project
ELMv3.2.6
Printed: 06/08/26

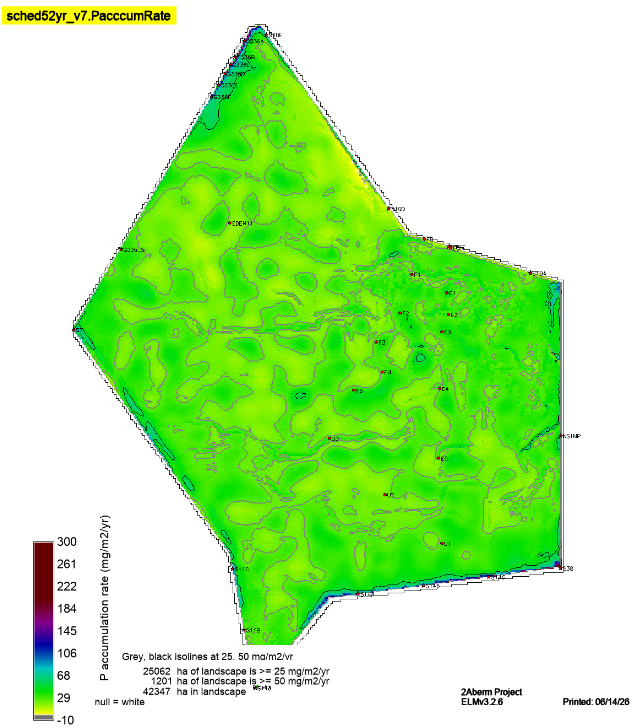


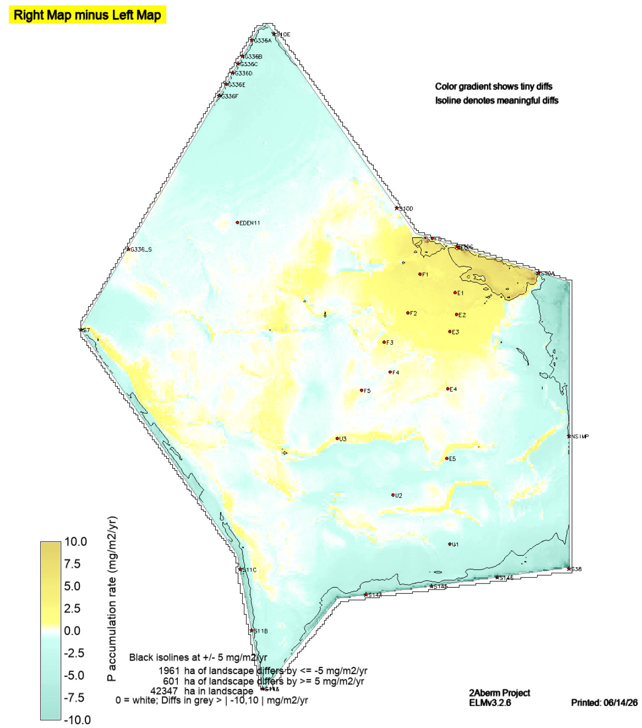
sched52yr_gap8_AMI234_plug_v7.PaccumRate
P accumulation rate (mg/m2/yr)
300
261
222
184
145
106
68
29
-10
Grey, black isolines at 25. 50 mg/m2/yr
24113 ha of landscape is >= 25 mg/m2/yr
879 ha of landscape is >= 50 mg/m2/yr
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/08/26

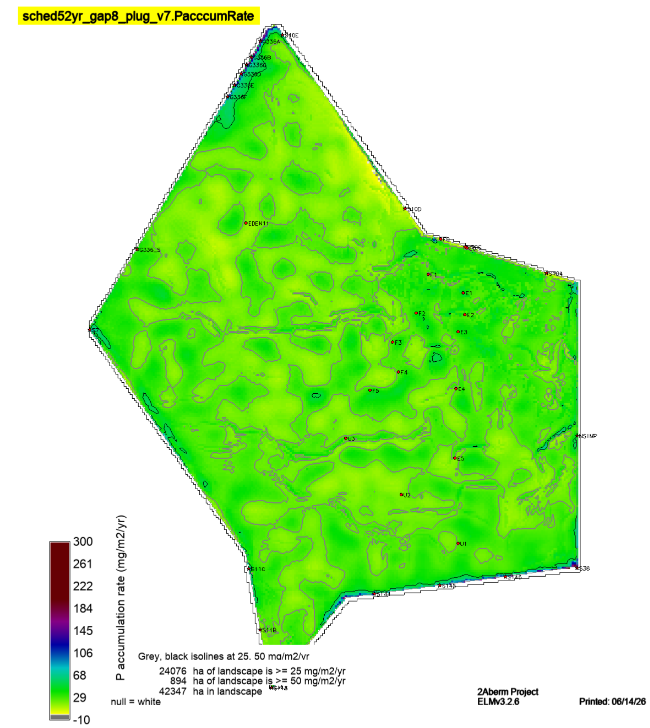

sched52yr_v7.PacccumRate
P accumulation rate (mg/m2/yr)
300
261
222
184
145
106
68
29
-10
Grey, black isolines at 25. 50 mg/m2/yr
25062 ha of landscape is >= 25 mg/m2/yr
1201 ha of landscape is >= 50 mg/m2/yr
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/12/26

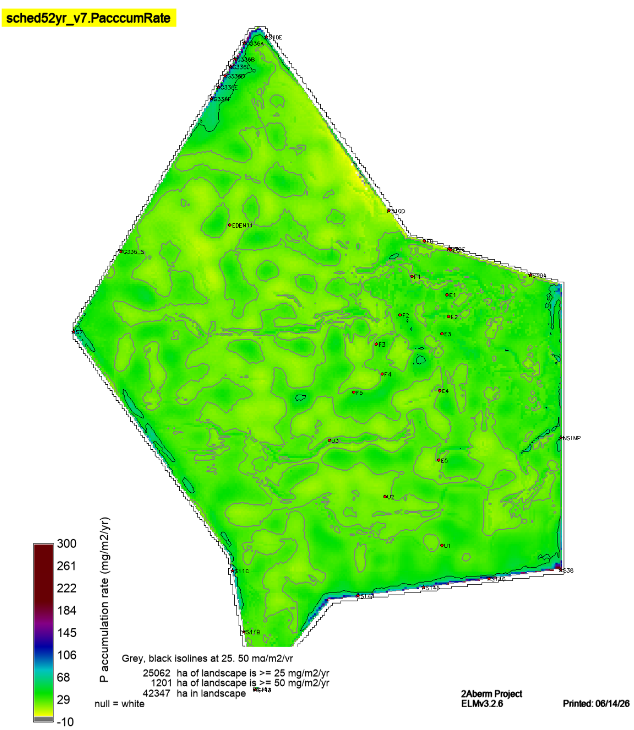

Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
P accumulation rate (mg/m2/yr)
10.0
7.5
5.0
2.5
0.0
-2.5
-5.0
-7.5
-10.0
Black isolines at +/- 5 mg/m2/yr
168 ha of landscape differs by <= -5 mg/m2/yr
69 ha of landscape differs by >= 5 mg/m2/yr
42347 ha in landscape
0 = white; Diffs in grey > | -10,10 | mg/m2/yr
2Aberm Project
ELMv3.2.6
Printed: 06/12/26

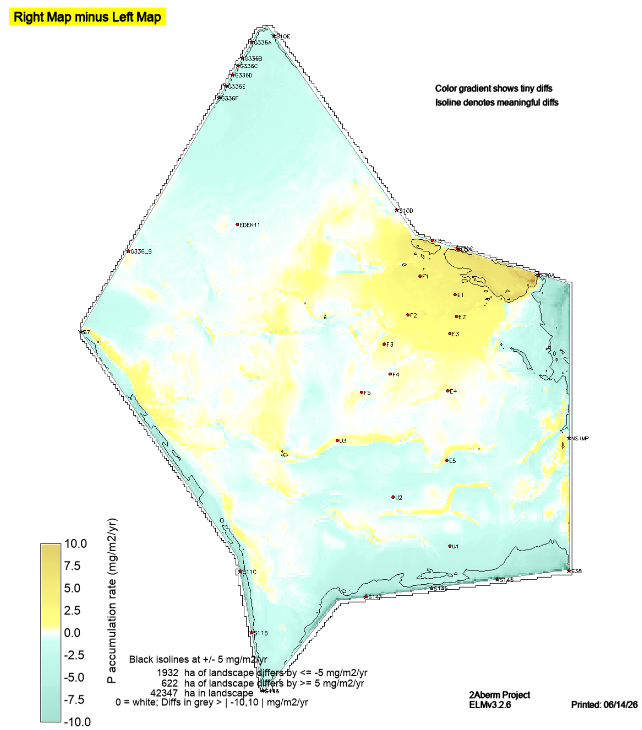

sched52yr_gap8_AMI234_v7.PacccumRate
P accumulation rate (mg/m2/yr)
300
261
222
184
145
106
68
29
-10
Grey, black isolines at 25. 50 mg/m2/yr
24953 ha of landscape is >= 25 mg/m2/yr
1208 ha of landscape is >= 50 mg/m2/yr
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/12/26

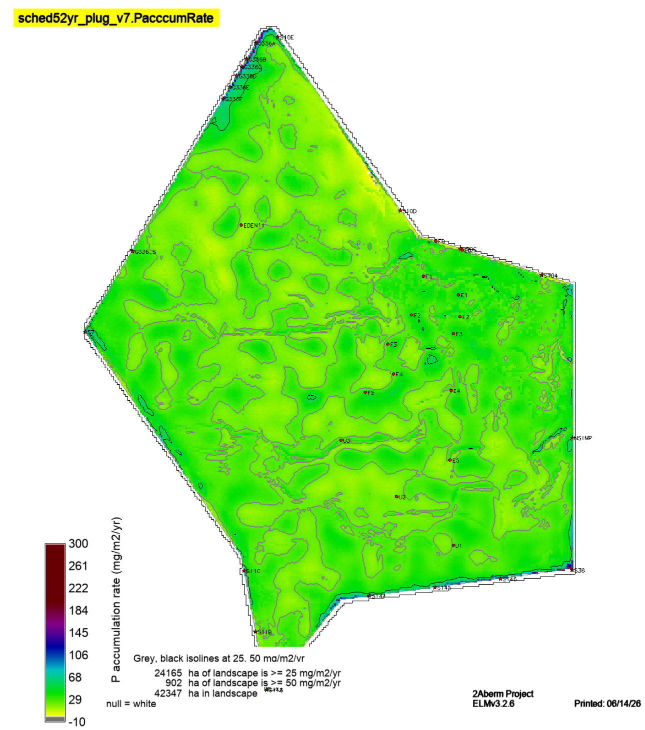

sched52yr_v7.PacccumRate
P accumulation rate (mg/m2/yr)
300
261
222
184
145
106
68
29
-10
Grey, black isolines at 25. 50 mg/m2/yr
25062 ha of landscape is >= 25 mg/m2/yr
1201 ha of landscape is >= 50 mg/m2/yr
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/14/26

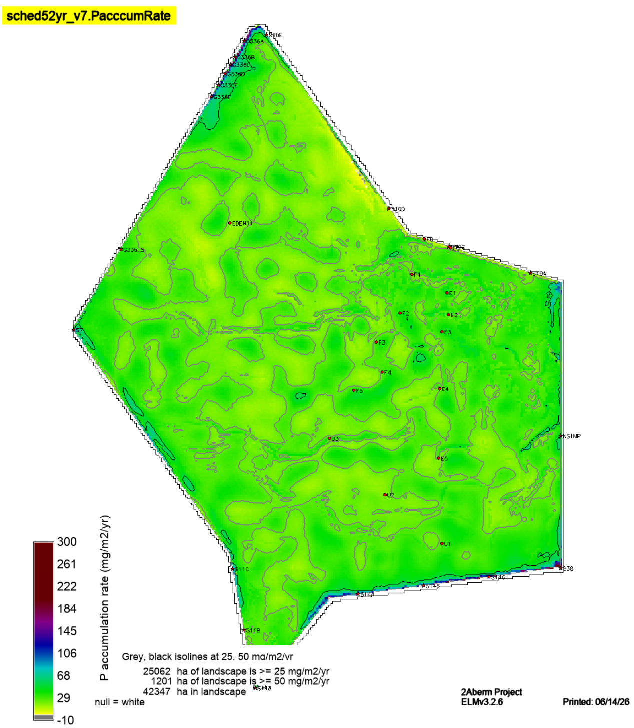

Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
P accumulation rate (mg/m2/yr)
10.0
7.5
5.0
2.5
0.0
-2.5
-5.0
-7.5
-10.0
Black isolines at +/- 5 mg/m2/yr
1961 ha of landscape differs by <= -5 mg/m2/yr
601 ha of landscape differs by >= 5 mg/m2/yr
42347 ha in landscape
0 = white; Diffs in grey > | -10,10 | mg/m2/yr
2Aberm Project
ELMv3.2.6
Printed: 06/14/26

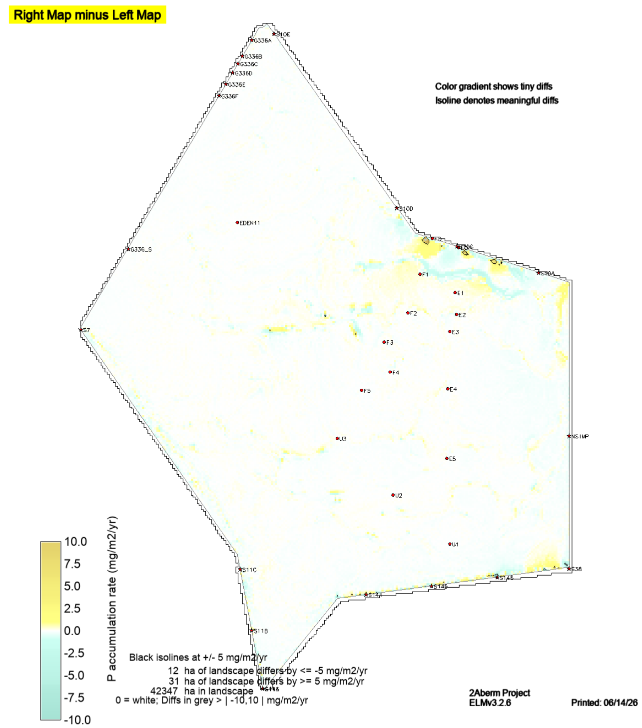

sched52yr_gap8_plug_v7.PacccumRate
P accumulation rate (mg/m2/yr)
300
261
222
184
145
106
68
29
-10
Grey, black isolines at 25. 50 mg/m2/yr
24076 ha of landscape is >= 25 mg/m2/yr
894 ha of landscape is >= 50 mg/m2/yr
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/14/26

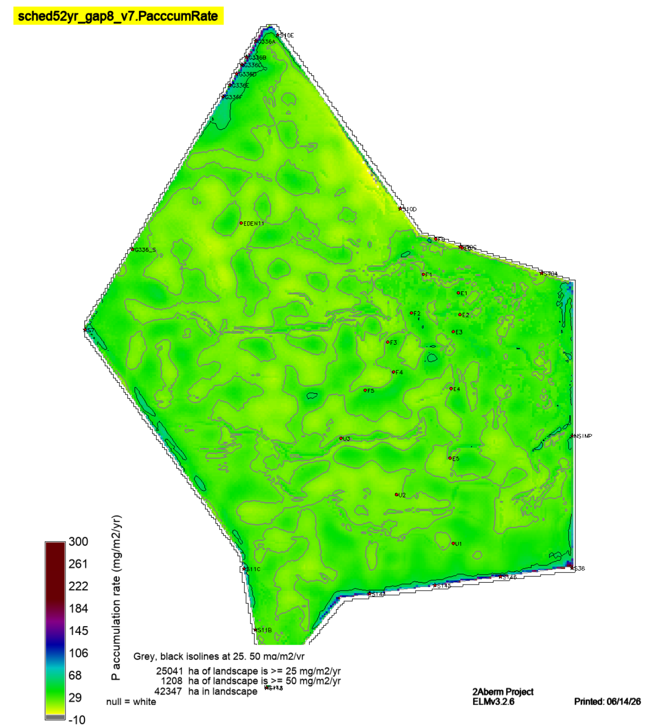

sched52yr_v7.PacccumRate
300
261
222
184
145
106
68
29
-10
P accumulation rate (mg/m2/yr)
Grey, black isolines at 25. 50 mg/m2/yr
25062 ha of landscape is >= 25 mg/m2/yr
1201 ha of landscape is >= 50 mg/m2/yr
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/14/26


Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
10.0
7.5
5.0
2.5
0.0
-2.5
-5.0
-7.5
-10.0
P accumulation rate (mg/m2/yr)
Black isolines at +/- 5 mg/m2/yr
1932 ha of landscape differs by <= -5 mg/m2/yr
622 ha of landscape differs by >= 5 mg/m2/yr
42347 ha in landscape
0 = white; Diffs in grey > | -10,10 | mg/m2/yr
2Aberm Project
ELMv3.2.6
Printed: 06/14/26


sched52yr_plug_v7.PacccumRate
300
261
222
184
145
106
68
29
-10
P accumulation rate (mg/m2/yr)
Grey, black isolines at 25. 50 mg/m2/yr
24165 ha of landscape is >= 25 mg/m2/yr
902 ha of landscape is >= 50 mg/m2/yr
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/14/26

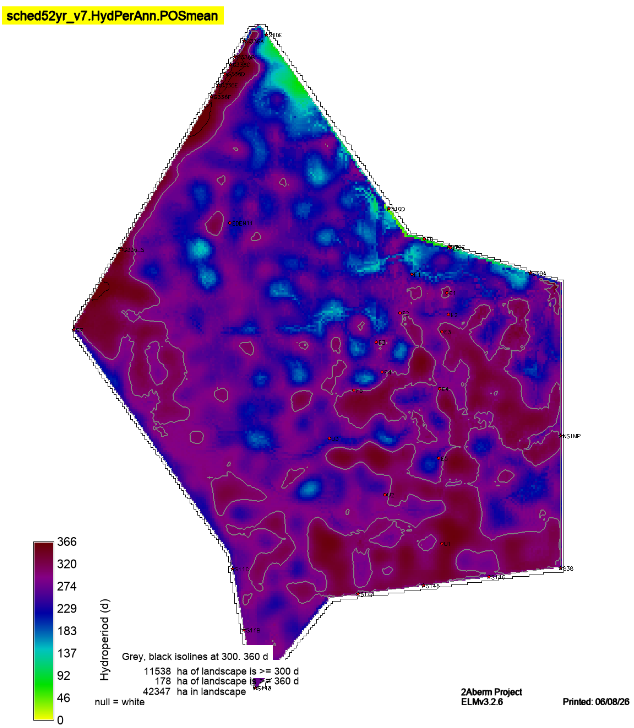

sched52yr_v7.PacccumRate
S10E
G336A
G336B
G336C
G336D
G336E
G336F
S10D
EDEN11
G336_S
S7
F1
E1
F2
E2
E3
F3
F4
F5
E4
U3
E5
U2
U1
NS1MP
S38
S11C
S11B
300
261
222
184
145
106
68
29
-10
P accumulation rate (mg/m2/yr)
Grey, black isolines at 25. 50 mg/m2/yr
25062 ha of landscape is >= 25 mg/m2/yr
1201 ha of landscape is >= 50 mg/m2/yr
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/14/26


Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
S10E
G336A
G336B
G336C
G336D
G336E
G336F
S10D
EDEN11
G336_S
S7
F1
E1
F2
E2
E3
F3
F4
F5
E4
U3
E5
U2
U1
NS1MP
S38
S11C
S11B
10.0
7.5
5.0
2.5
0.0
-2.5
-5.0
-7.5
-10.0
P accumulation rate (mg/m2/yr)
Black isolines at +/- 5 mg/m2/yr
12 ha of landscape differs by <= -5 mg/m2/yr
31 ha of landscape differs by >= 5 mg/m2/yr
42347 ha in landscape
0 = white; Diffs in grey > | -10,10 | mg/m2/yr
2Aberm Project
ELMv3.2.6
Printed: 06/14/26

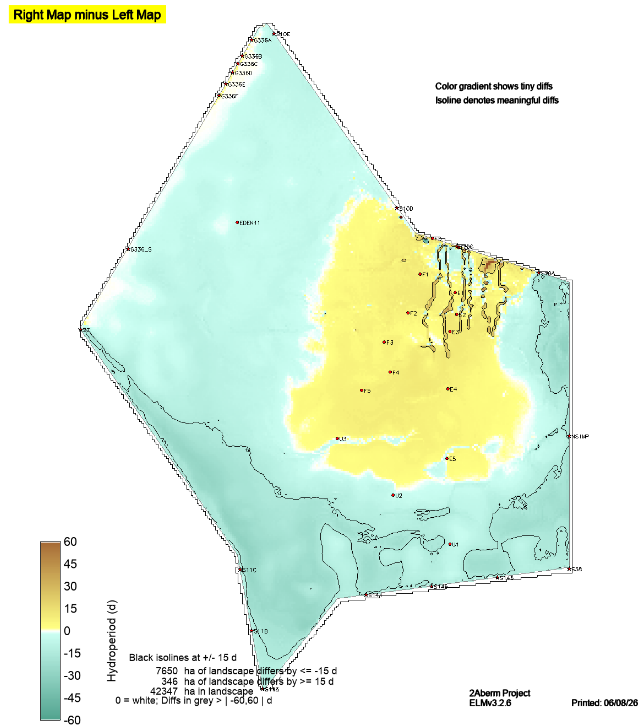

sched52yr_gap8_v7.PacccumRate
S10E
G336A
G336B
G336C
G336D
G336E
G336F
S10D
EDEN11
G336_S
S7
F1
E1
F2
E2
E3
F3
F4
F5
E4
U3
E5
U2
U1
NS1MP
S38
S11C
S11B
300
261
222
184
145
106
68
29
-10
P accumulation rate (mg/m2/yr)
Grey, black isolines at 25. 50 mg/m2/yr
25041 ha of landscape is >= 25 mg/m2/yr
1208 ha of landscape is >= 50 mg/m2/yr
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/14/26

1.8.2.3 Basin-wide region: Hydrology, POS mean

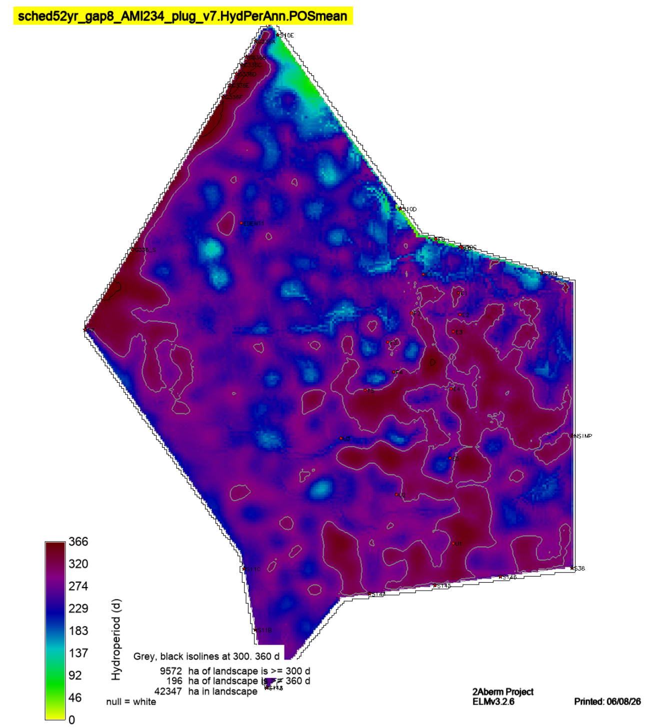
- ***Hydroperiod*** - Following 5 Figure pages= Figures Map12 (5 scenario pages for each variable's Figure Map).
- Bullets below are **difference map "pattern judgment" summaries** of results in the below 5 Map Figures:
  - IMPORTANTLY, this POS mean evaluation is associated with the fact that **long-term mean values tend to average-out the effects of relatively brief seasonal periods of S10 inflows**, particularly for an annual variable such as hydroperiod.
  - Gaps: little to no hydroperiod change in the basin
  - Plug: meaningful increase in hydroperiod, in a small area in the NEberm;
    - broad region of marginal increases in hydroperiod, from the NEberm to the central basin
    - regions of meaningful decreases in hydroperiod along the eastern boundary, and small decreases distributed elsewhere
  - Gaps&Plug: no meaningful differences from Plug-only
  - AMI&Gaps: meaningful-to-marginal increase in hydroperiod, restricted to the AMI sloughs;
    - spatially variable decreases in hydroperiod in NEberm area
    - very small increases in hydroperiod near central basin
  - AMI&Gaps&Plug: meaningful increase in hydroperiod, restricted to the AMI sloughs
    - broad region of marginal increases in hydroperiod, from the NEberm to the central basin
    - regions of meaningful decreases in hydroperiod along the eastern boundary, and small decreases distributed elsewhere



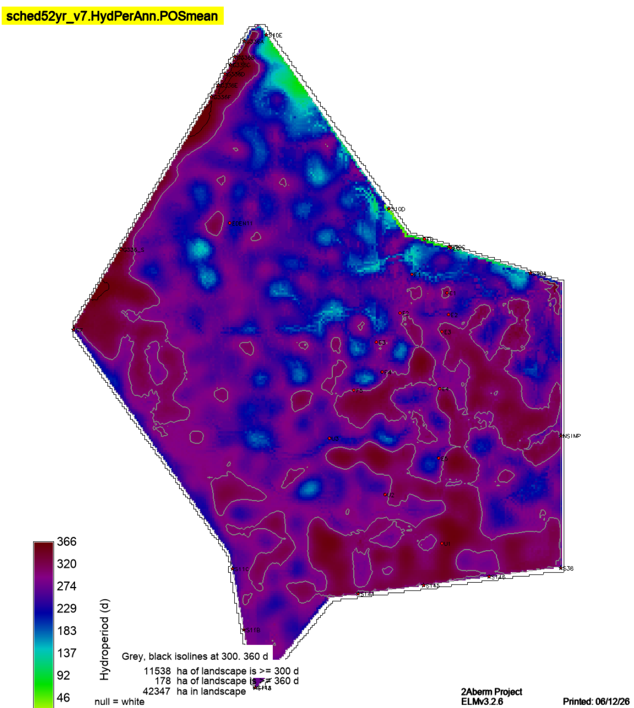
sched52yr_v7.HydPerAnn.POSmean
366
320
274
229
183
137
92
46
0
Hydroperiod (d)
Grey, black isolines at 300. 360 d
11538 ha of landscape is >= 300 d
178 ha of landscape is >= 360 d
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/08/26

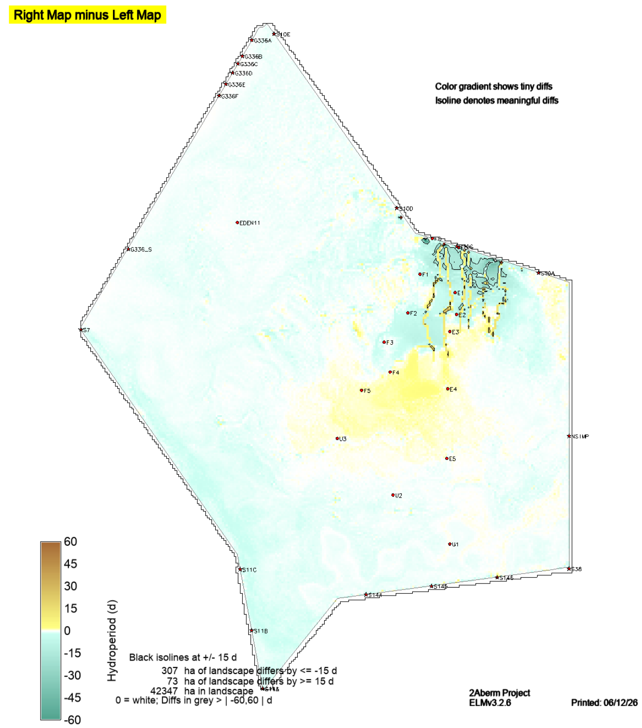


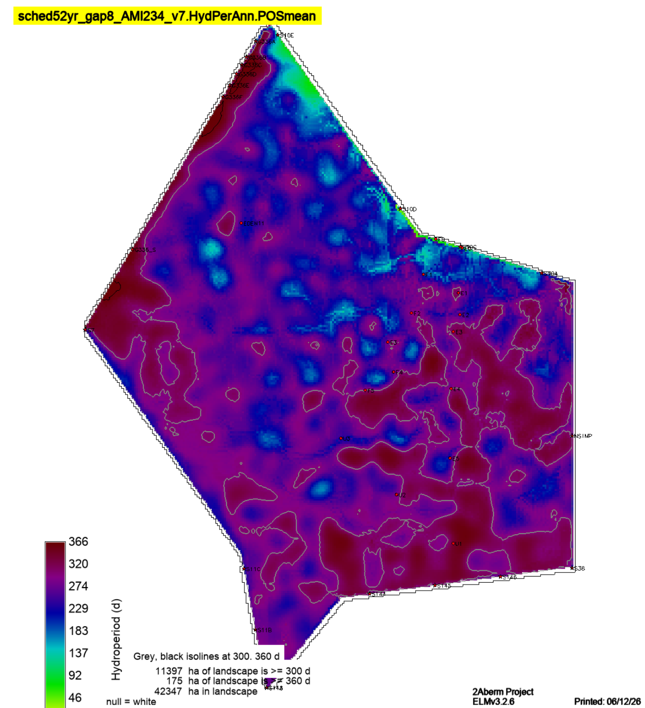
Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
60
45
30
15
0
-15
-30
-45
-60
Hydroperiod (d)
Black isolines at +/- 15 d
7650 ha of landscape differs by <= -15 d
346 ha of landscape differs by >= 15 d
42347 ha in landscape
0 = white; Diffs in grey > | -60,60 | d
2Aberm Project
ELMv3.2.6
Printed: 06/08/26

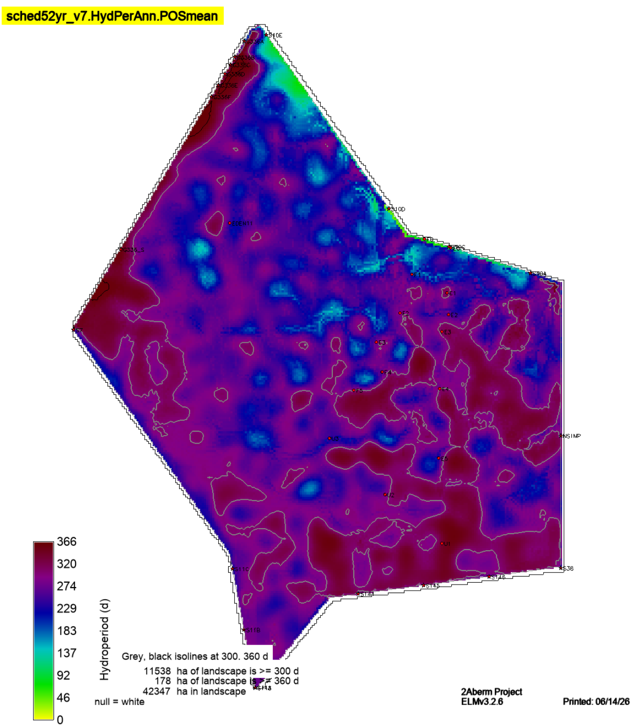


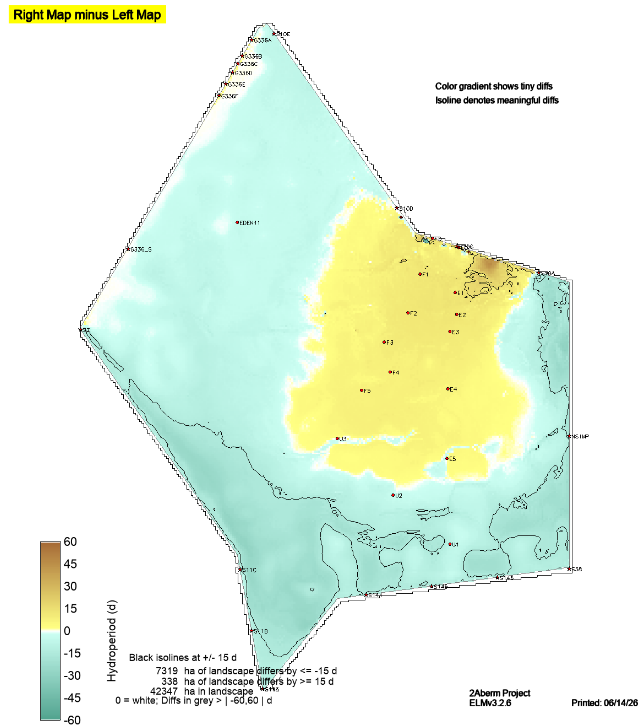
sched52yr_gap8_AMI234_plug_v7.HydPerAnn.POSmean
366
320
274
229
183
137
92
46
0
Hydroperiod (d)
Grey, black isolines at 300. 360 d
9572 ha of landscape is >= 300 d
196 ha of landscape is >= 360 d
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/08/26

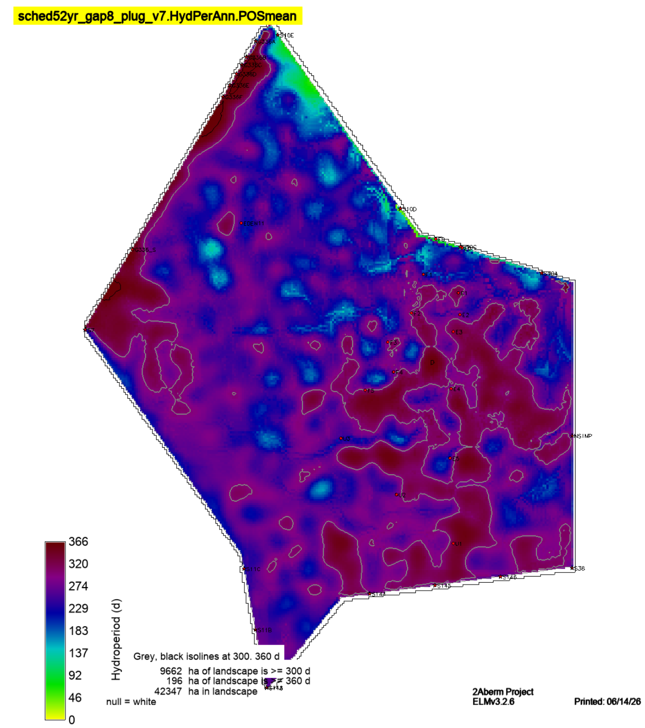

sched52yr_v7.HydPerAnn.POSmean
366
320
274
229
183
137
92
46
0
Hydroperiod (d)
Grey, black isolines at 300. 360 d
11538 ha of landscape is >= 300 d
178 ha of landscape is >= 360 d
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/12/26

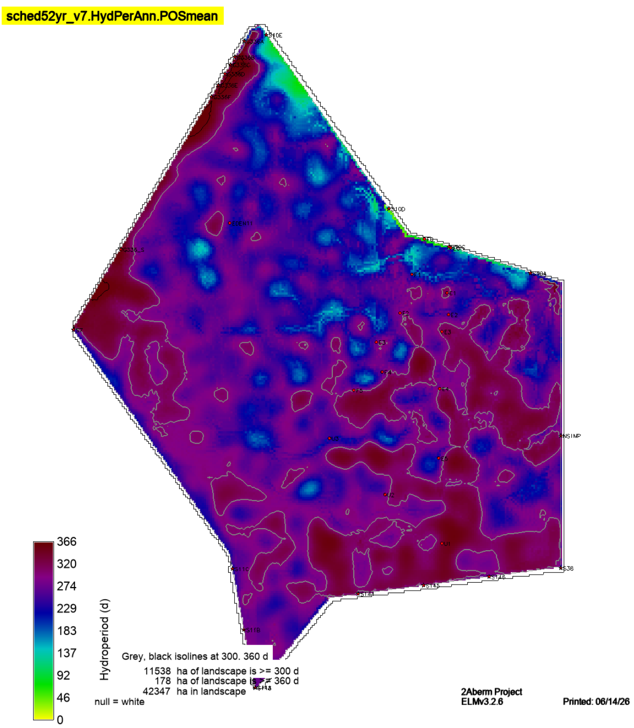

Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
60
45
30
15
0
-15
-30
-45
-60
Hydroperiod (d)
Black isolines at +/- 15 d
307 ha of landscape differs by <= -15 d
73 ha of landscape differs by >= 15 d
42347 ha in landscape
0 = white; Diffs in grey > | -60,60 | d
2Aberm Project
ELMv3.2.6
Printed: 06/12/26

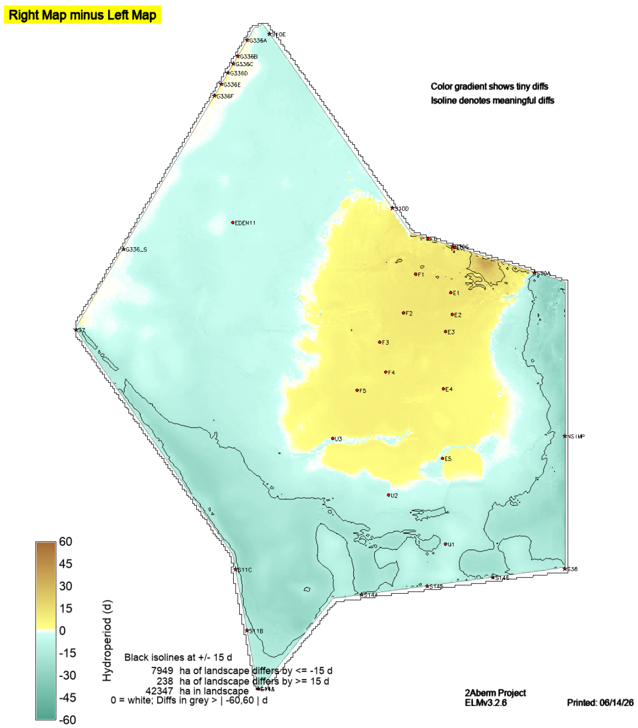

sched52yr_gap8_AMI234_v7.HydPerAnn.POSmean
366
320
274
229
183
137
92
46
0
Hydroperiod (d)
Grey, black isolines at 300. 360 d
11397 ha of landscape is >= 300 d
175 ha of landscape is >= 360 d
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/12/26

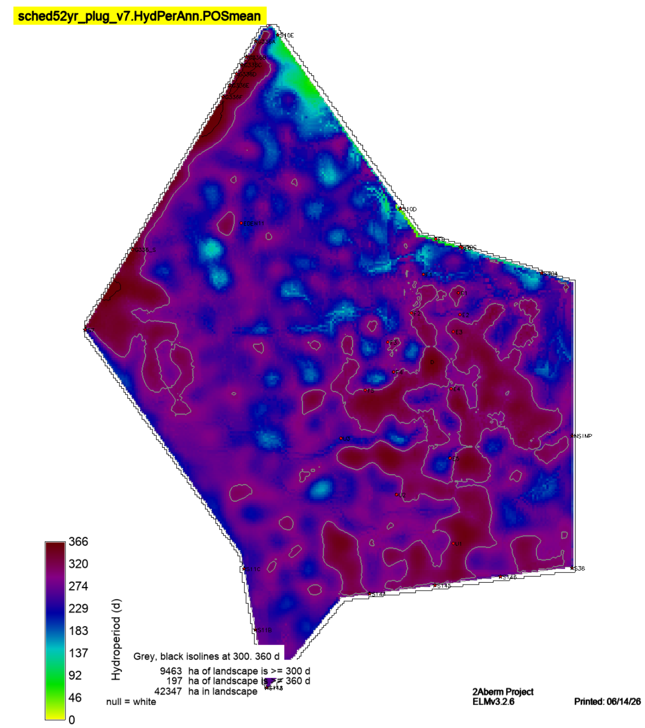

sched52yr_v7.HydPerAnn.POSmean
366
320
274
229
183
137
92
46
0
Hydroperiod (d)
Grey, black isolines at 300. 360 d
11538 ha of landscape is >= 300 d
178 ha of landscape is >= 360 d
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/14/26

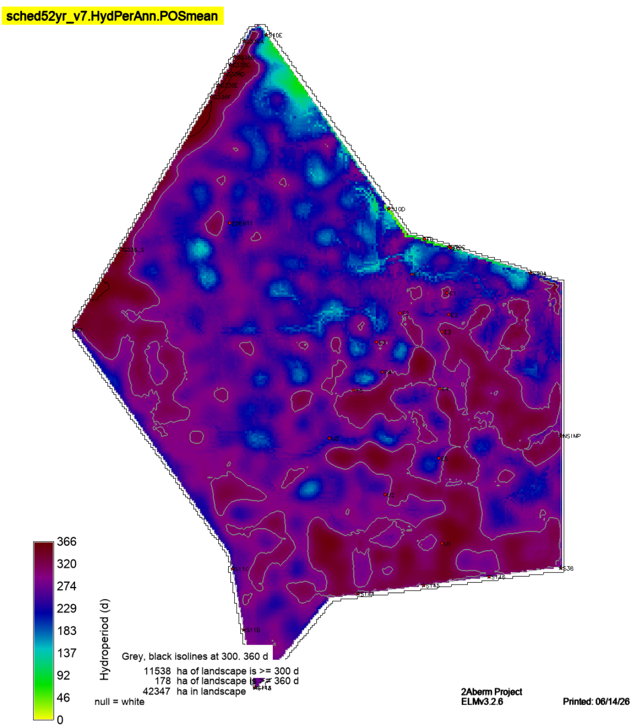

Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
60
45
30
15
0
-15
-30
-45
-60
Hydroperiod (d)
Black isolines at +/- 15 d
7319 ha of landscape differs by <= -15 d
338 ha of landscape differs by >= 15 d
42347 ha in landscape
0 = white; Diffs in grey > | -60,60 | d
2Aberm Project
ELMv3.2.6
Printed: 06/14/26

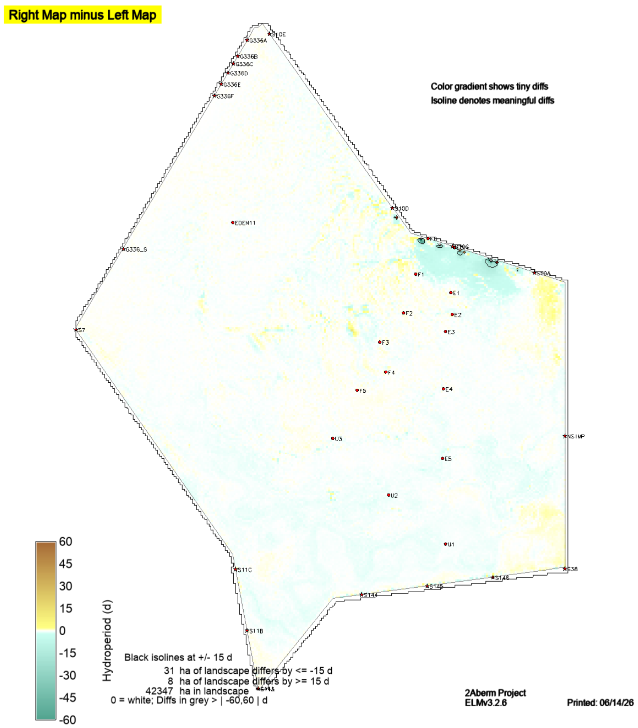

sched52yr_gap8_plug_v7.HydPerAnn.POSmean
366
320
274
229
183
137
92
46
0
Hydroperiod (d)
Grey, black isolines at 300. 360 d
9662 ha of landscape is >= 300 d
196 ha of landscape is >= 360 d
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/14/26

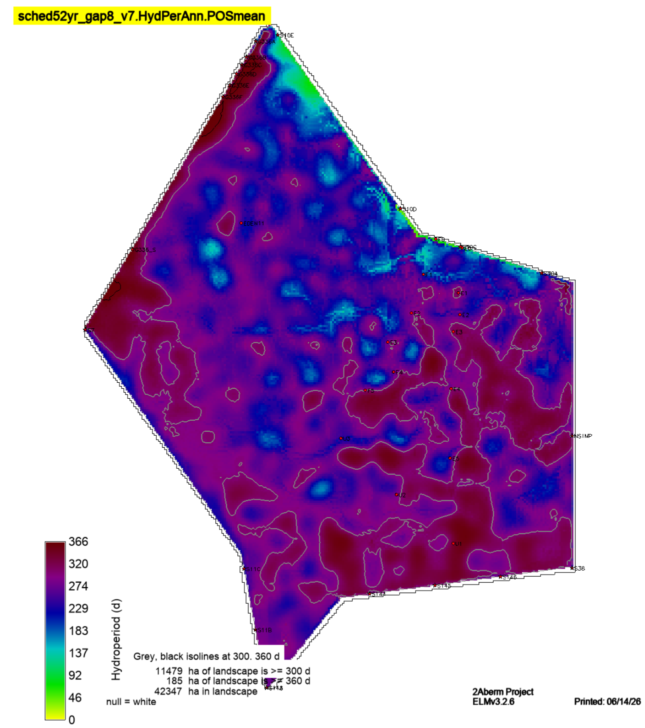

sched52yr_v7.HydPerAnn.POSmean
366
320
274
229
183
137
92
46
0
Hydroperiod (d)
Grey, black isolines at 300. 360 d
11538 ha of landscape is >= 300 d
178 ha of landscape is >= 360 d
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/14/26


Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
60
45
30
15
0
-15
-30
-45
-60
Hydroperiod (d)
Black isolines at +/- 15 d
7949 ha of landscape differs by <= -15 d
238 ha of landscape differs by >= 15 d
42347 ha in landscape
0 = white; Diffs in grey > | -60,60 | d
2Aberm Project
ELMv3.2.6
Printed: 06/14/26


sched52yr_plug_v7.HydPerAnn.POSmean
366
320
274
229
183
137
92
46
0
Hydroperiod (d)
Grey, black isolines at 300. 360 d
9463 ha of landscape is >= 300 d
197 ha of landscape is >= 360 d
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/14/26


sched52yr_v7.HydPerAnn.POSmean
366
320
274
229
183
137
92
46
0
Hydroperiod (d)
Grey, black isolines at 300. 360 d
11538 ha of landscape is >= 300 d
178 ha of landscape is >= 360 d
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/14/26


Right Map minus Left Map
Color gradient shows tiny diffs
Isoline denotes meaningful diffs
60
45
30
15
0
-15
-30
-45
-60
Hydroperiod (d)
Black isolines at +/- 15 d
31 ha of landscape differs by <= -15 d
8 ha of landscape differs by >= 15 d
42347 ha in landscape
0 = white; Diffs in grey > | -60,60 | d
2Aberm Project
ELMv3.2.6
Printed: 06/14/26


sched52yr_gap8_v7.HydPerAnn.POSmean
366
320
274
229
183
137
92
46
0
Hydroperiod (d)
Grey, black isolines at 300. 360 d
11479 ha of landscape is >= 300 d
185 ha of landscape is >= 360 d
42347 ha in landscape
null = white
2Aberm Project
ELMv3.2.6
Printed: 06/14/26

1.8.3 Difference Graph results - BIRs

As indicated in the **Introduction** (and other Project documents), our Project goals focus on improved water flows and depths in the (currently degraded) northeast region of WCA-2A. Towards that focus, the Basin/Indicator Regions (BIRs) were defined in a series of ~North-South and ~East-West transects primarily in that northeast region (Figure 6), including East-West BIRs closer to central WCA-2A. For this project, the BIRs are primarily used to explore time series details of hydro-ecological budget variables along spatial BIR gradients.

In the northeast region, the North-South BIR transect component defines a North-South, generally down-elevation, flow path downstream of the S10 structures and the associated NEberm. As seen in Figure 6, this approximately-North-South gradient was further divided into a series of approximately-East-West sections (BIRs) that were defined in relation to the distances along the S10D, S10C, and S10A inflow structures.

> *For these ELM3wca2_100 applications, we always output a wide variety of hydro-ecological variables for all BIRS, at a (calendar) monthly outstep. Individual BIR budgets of water, phosphorus, and chloride are calculated, using a variety of mass and volume units for use in a variety of evaluation objectives. Moreover, we also output a set of "primary", most-used, hydro-ecological variables that are averaged within each BIR within an outstep period. All of these budget and variable BIR files are output as tab-delimited text files (for easy copy-paste into MS Excel spreadsheets). Those BIR output files (along with many other outputs) are available at (the "Results: Raw model output" section of) https://www.ecolandmod.com/projects/ELM3wca2a/modelOutRaw.html.*

We used MS Excel ELM-output templates to copy-paste Base vs. Alternative scenario BIR output for the budget variables of: **surface water inflow**, and **surface water chloride inflow**. There is a very large number of BIR time series graphs (36 BIR graphs per Alternative scenario, per budget file). The complete set of (water and chloride) Base vs. Alternative MS Excel graph files for all Alternatives is found at https://www.ecolandmod.com/projects/ELM3wca2a/scenarios_diffGraphs.html.

Because of that data complexity, here we simply provide water and chloride budget examples along the North-South BIR transect that is intermediate between the S10C and S10A inflow structures (named "S10C down-up" in Figure 6). The BIR transect distances from the structures' inflow are: 0m, 300m, 600m, and 1300m for the four BIRs shown in the example graphs. As seen in the vector outline in Figure 6, note that the 0m distance BIRs are effectively inside/upstream of the NEberm, with its high elevations that normally tend to block flows to the south.

These BIR budget evaluations were useful primarily in exploring details of the differences among scenarios, and among spatial relationships of the BIRs. They were not used to a significant degree in evaluating the relative benefits among Project Alternative scenarios compared to the Base.

1.8.3.1 Transect from S10C&S10A: Surface water inflow budget

- *Base vs.* AMI&Gaps&Plug *comparisons* - below Figure Graph1.

- The below figure shows the highly dynamic details of surface water inflows into each BIR along the North-South transect that starts approximately midway between the S10C and S10A inflow structures. Driven by the Current Schedule for WCA-2A stage regulation, the timing and magnitude of inflows are driven primarily by the basin's antecedent water levels, along with recent rainfall inputs.
- **Seasonal, schedule-driven pulses of S10 flows** frequently resulted in the AMI&Gaps&Plug Alternative scenario having larger inflows compared to the Base scenario - during those flow events. The temporal component remained ~constant along the transect, and the magnitude of inflows marginally decreased along the 1.3 km transect distance. Not shown, but in two BIRs that are approximately 2 km and 4 km downstream of the S10 inflows - the magnitude of all scenarios' inflows further decreased, as water generally disperses throughout the marsh.

Figure Graph1. Alternative (blue) vs. Base (red) comparative surface water inflow budgets in four BIRs along a 1.3 km gradient downstream of the S10 inflow. The Alternative scenario incorporates the Gaps, AMI, and Plug. See above text for details.

1.8.3.2 Transect from S10C&S10A: Surface water chloride inflow budget

- *Base vs. AMI&Gaps&Plug comparisons* - below Figure Graph2. *Note: the common vertical axis scale for the chloride budget is determined by higher values seen elsewhere in the basin, particularly the higher-concentration outflows from STA2.*
    - The below figure shows the highly dynamic details of surface water chloride mass inflows into each BIR along the North-South transect that starts approximately midway between the S10C and S10A inflow structures. Driven by the Current Schedule for WCA-2A stage regulation, the timing and magnitude of inflows are driven primarily by the basin's antecedent water levels, along with recent rainfall inputs.
    - **Seasonal, schedule-driven pulses of S10 flows** frequently resulted in the AMI&Gaps&Plug Alternative scenario having larger chloride mass inflows compared to the Base scenario - during those flow events. The temporal component remained ~constant along the transect, and the magnitude of inflows marginally decreased along the 1.3 km transect distance. Not shown, but in two BIRs that are approximately 2 km and 4 km downstream of the S10 inflows - the magnitude of all scenarios' inflows further decreased, as water generally disperses throughout the marsh.
    - As a tracer of water flows, the surface water chloride budget dynamics along this particular BIR transect closely tracked those of the surface water itself.

Figure Graph2. Alternative (blue) vs. Base (red) comparative surface water chloride (tracer) inflow budgets in four BIRs along a 1.3 km gradient downstream of the S10 inflow. The Alternative scenario incorporates the Gaps, AMI, and Plug. See above text for details.

1.9 Synthesis

The SFWMD and EcoLandMod science team will use these Performance Measure results to evaluate the relative benefits of the Alternative scenarios... (While virtually all of this discussion relies on the results included in this document, the complete Performance Measure results are available at: https://www.ecolandmod.com/projects/ELM3wca2a/).

The Project goals focus on increasing depths and flows in the NEberm subregion, and we define "benefits" via relative differences (improvements) between future Alternatives compared to the future Base. Generally, the Performance Measures were used to evaluate hydro-ecological improvements primarily in the NEberm subregion, whether via NEberm subregion or basin-wide region map presentations.

Depth and flow increases in adjacent areas, along the eastern boundary of the WCA-2A basin, are not specifically a component of the desired Project benefits. Nevertheless, the Project goals generally assume (and evaluated) improved hydro-ecological benefits for the entire basin. Because of the historical "short-circuiting" of NEberm flows to the eastern border, we emphasize the improvement of dynamics in the (historically) "dry" NE region, while considering the need to maintain ecologically beneficial depths along the eastern periphery.

A potential constraint of this, and most Everglades restoration projects, is phosphorus (P) loading & increased eutrophication. Because of the downstream cascade of P dynamics, we considered P dynamics primarily in the context of spatial patterns and marsh areas in the entire basin. This of course still maintains a focus on the NEberm region, where Project Alternatives changed flow distributions.

Here, we briefly summarize some general trends/observations from the results:

- There was strong evidence that:
  - berm Gaps by themselves appear to show relatively marginal, albeit positive, benefit;
  - a canal Plug provides broad ranging benefits, and is also useful towards maximal benefits when considered in conjunction with AMI&Gaps;
  - AMI&Gaps provides broad ranging benefits beyond that of Plug-only, especially in newly created sloughs;
  - AMI&Gaps&Plug provides the greatest, broad ranging benefits throughout the NEberm subregion, and especially in newly created sloughs.
- Increases in P eutrophication were minimal, primarily due to the assumption of (STA-derived) low P concentrations in the water introduced to the basin via the S10 structures. A very small area of any of the future Alternatives had P accumulation rates that exceeded 50 mg/m^2/y, which is the accepted threshold for detrimental ecosystem effects (Flower et al. 2019).
  - Moreover, the marsh area exceeding that threshold P accumulation rate in all of the Alternatives was always less than or ~equal to that of the Base;

- While difference-map results of the HighFlow Floc_P_OM Performance Measure may provide a perception that the AMI&Gap(&Plug) led to some eutrophication in the new AMI sloughs, those were relatively low floc P concentrations, and represented a relatively transient high-flow extreme (as seen in the full set of Performance Measures online).

1.10 Literature Cited

Fitz, H. C. 2025. Everglades Landscape Model (ELM) Modeling in Support of Water Conservation Area 2A Flow Restoration: Task2 Ground Elevation and Vegetation Data. June 17, 2025. Report submitted by EcoLandMod, Inc. to South Florida Water Management District: 39 pp., Fort Pierce, FL.

Fitz, H. C. 2026. Everglades Landscape Model (ELM) Modeling in Support of Water Conservation Area 2A Flow Restoration: Task3 -- Revised -- Model Performance. March 1, 2026. Report submitted by EcoLandMod, Inc. to South Florida Water Management District: 121 pp., Fort Pierce, FL.

Flower, H., M. Rains, C. Fitz, W. Orem, S. Newman, T. Osborne, K. Reddy, and J. Obeysekera. 2019. Shifting ground: Landscape-scale modeling of biogeochemical processes under climate change in the Florida Everglades. Environmental Management 64:416-435. doi: 10.1007/s00267-019-01200-8

1.11 Appendix: Difference Map results - Pattern summaries

Appendix Tables a, b, c, & d (four pages). **EcoLandMod NOTES**: Qualitative professional assessments of primary patterns in the Performance Measure Difference Maps (see section: **Difference Map results**). The "ALT" column is the abbreviated name of the future Alternative. The "Slough-specific" column is restricted to the AMI sloughs. The "NEberm N-S" column considers primarily the NorthEast area patterns. The "Other" provides additional notes, often relating to the eastern boundary of the basin. See section: **Difference Map results** for details.

a)	**Temporal, Variable: ALT**			**Difference-Map Pattern Notes**		
NEberm subregion				Slough-specific	NEberm N-S	Other
	POS	Depth				
			AMI_Gap_Plu	+Vector	+Color in N-S	
			AMI_Gap	some +Vector; some +Color	some +Color in S; some --Color in N	
			Gap_Plu	none	+Color in N-S; +Vector in N	
			Plu	none	+Color in N-S; +Vector in N	Slightly less +Vector than Gap_Plu, near "elbow"
			Gap	none	slight --Color in N	
	POS	Veloc				
			AMI_Gap_Plu	+Vector	+Color in N-S; +Vector in N	
			AMI_Gap	mostly +Vector	some +Color in S; some --Color in N	
			Gap_Plu	none	+Color in N-S; +Vector in N	
			Plu	none	+Color in N-S; +Vector in N	
			Gap	none	v. slight --Color in N; v. slight +Color in W	Some small +Vector pockets dowstream of gaps
	POS	Cl				
			AMI_Gap_Plu	none	+Color in N-S; +Vector in NW	Narrow swath of +Vector dowstream berm W of S10A
			AMI_Gap	none	some +Color in NW	V. small pockets of +Vector @ berm gaps
			Gap_Plu	none	+Color in N-S; +Vector in NW	Narrow swath of +Vector dowstream berm W of S10A
			Plu	none	+Color in N-S; +Vector in NW	Narrow swath of +Vector dowstream berm W of S10A
			Gap	none	slight +Color in NW	V. small pockets of +Vector @ berm gaps

b)	Temporal, Variable: ALT			Difference-Map Pattern Notes		
NEberm subregion				Slough-specific	NEberm N-S	Other
	HiFlo	Depth				
			AMI_Gap_Plu	++Vector	++Color in N-S; ++Vector in N-S	
			AMI_Gap	+Vector	+Color in N-S; +Vector in N-S	
			Gap_Plu	none	++Color in N-S; ++Vector in N-S	
			Plu	none	++Color in N-S; ++Vector in N-S	
			Gap	none	some +Color in N-S; small +Vector NW	Pocket of +Vector at elbow; V. small pockets of +Vector @ berm gaps
	HiFlo	Veloc				
			AMI_Gap_Plu	++Vector	++Color in N-S; ++Vector in N-S	
			AMI_Gap	+Vector	+Color in N-S; some --Color in N	
			Gap_Plu	none	++Color in N-S; ++Vector in N-S	
			Plu	none	++Color in N-S; ++Vector in N-S	
			Gap	none	some +Color in N-S; small +Vector NW	Pockets of +Vector at elbow, other gap locs
	HiFlo	Cl				
			AMI_Gap_Plu	none	++Color in N-S; ++Vector in N-S	
			AMI_Gap	none	some +Color in N-S; small +Vector N-S	Sporadic pattern of --Color in E
			Gap_Plu	none	++Color in N-S; ++Vector in N-S	
			Plu	none	++Color in N-S; ++Vector in N-S	
			Gap	none	some +Color in N-S; small +Vector NW	Pocket of +Vector at elbow

c)	Temporal, Variable: ALT			Difference-Map Pattern Notes		
NEberm subregion				Slough-specific	NEberm N-S	Other
	LoFlo	Depth				
			AMI_Gap_Plu	+Color (inside broad N-S +Vector)	+Color in N-S; +Vector in N-S	
			AMI_Gap	some +Vector; some +Color	some +Color in S; some --Color in N	
			Gap_Plu	none	+Color in N-S; +Vector in N-S	
			Plu	none	+Color in N-S; +Vector in N-S	
			Gap	none	some +Color in N-S	Pockets of +Vector at gap locs between S10A & S10C
	LoFlo	Veloc				
			AMI_Gap_Plu	partial ++Vector N	+Color in N-S; +Vector in N-S	Complex + pattern to SW from near S10C; S10A downstream is --Color
			AMI_Gap	partial +Vector N	+Color in N-S;	Some +Color to SW; S10A downstream is --Color
			Gap_Plu	none	+Color in N-S; +Vector in N-S	Complex + pattern to SW from near S10C; S10A downstream is --Color
			Plu	none	+Color in N-S; +Vector in N-S	Complex + pattern to SW from near S10C; S10A downstream is --Color
			Gap	none	some +Color in N-S; small +Vector N	Pockets of +Vector at gap locs between S10A & S10C
	LoFlo	Cl				
			AMI_Gap_Plu	minimal, unclear if slough	+Color in N-S; +Vector in N-S	Complex pattern to SW from near S10C; S10A downstream is --Color
			AMI_Gap	minimal, unclear if slough	some +Color in N-S; some --Color in N	Complex pattern to SW from near S10C; S10A downstream is --Color
			Gap_Plu	none	+Color in N-S; +Vector in N-S	Complex pattern to SW from near S10C; S10A downstream is --Color
			Plu	none	+Color in N-S; +Vector in N-S	Complex pattern to SW from near S10C; S10A downstream is --Color
			Gap	none	some +Color in N-S; small --Vector NW	Pocket of --Vector at elbow

d)	Temporal, Variable: ALT			Difference-Map Pattern Notes		
Basin-wide region						
	HiFlo	FlocP				
			AMI_Gap_Plu	+Vector	+Color in NEberm	General --Color/Vector along East bound
			AMI_Gap	+Vector	minimal	
			Gap_Plu	none	+Color in NEberm	General --Color/Vector along East bound
			Plu	none	+Color in NEberm	General --Color/Vector along East bound
			Gap	none	minimal	
	POSrate	Paccum				
			AMI_Gap_Plu	partial +Vector	+Color in NEberm; +Vector in NEberm	General --Color/Vector along East bound
			AMI_Gap	partial --Vector	minimal	
			Gap_Plu	none	+Vector in NEberm	General --Color/Vector along East bound
			Plu	none	+Vector in NEberm	General --Color/Vector along East bound
			Gap	none	minimal	
	POS	HydPer				
			AMI_Gap_Plu	mostly +Vector	+Color in NEberm	General --Color/Vector along East bound
			AMI_Gap	mostly +Color	mostly --Color in NEberm	
			Gap_Plu	none	+Color in NEberm; +Vector in NEberm	General --Color/Vector along East bound
			Plu	none	+Color in NEberm; +Vector in NEberm	General --Color/Vector along East bound
			Gap	none	minimal	