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North American Remediation Organization

Former Moss American Facility Work Plan

8716 North Granville Road

Milwaukee, WI

Presented to:

Wisconsin Department of Natural Resources

Bureau for Remediation and Redevelopment

August 25, 2017

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BACKGROUND

Clean Harbors Environmental Services (Clean Harbors) has developed the following work plan to perform the remediation of soil impacted with creosote hazardous waste at the Former Moss American Facility located at 8716 North Granville Road Milwaukee, WI. This work plan is in accordance with scope of work provided by the Wisconsin Department of Natural Resources – Bureau for Remediation and Redevelopment (WI DNR).

The scope of work identifies impacted soil in three different locations: Area 1, 2, and 3. Area 1 consists of an area of approximately 60' x 75', with a total depth varying between 8' and 16' below ground surface (bgs). Area 2 consists of an area of approximately 100' x 170', with a total depth of 16' bgs. Area 3 consists of an area of approximately 40' x 20', with a total depth of 7' bgs. The following scope of work is to be completed by Clean Harbors at the direction of WI DNR or designated oversight:

- Mobilization of equipment
- Clearing and grubbing of the area, and installation of Storm water Management controls;
- Installation of temporary site features
- Installation of sheet piling and removal of existing sheet piling;
- Excavation and stockpiling of low level impacted overburden soils in Areas 1 and 2;
- Excavation and loadout of impacted soil in Areas 1, 2, and 3;
- Coordination of off-site soil transportation to disposal facility;
- Groundwater collection, storage, and coordination of off-site disposal;
- Backfill of low level impacted soil in excavation, and mixing with oxidant;
- Backfill and final re-grading with imported soil;
- Removal of existing monitoring wells, sampling sumps, and injection points;
- Demolition of existing structure;
- Replacement of site fencing;
- Final topsoil placement and seeding.

WORK SEQUENCE

Clean Harbors will utilize one (1) Project Manager and one (1) Site Foreman for the overall management of this project and interaction with WI DNR oversight manager. The other on-site personnel will consist of three (3) Equipment Operators, and subcontracted personnel for crane operation and final fence installation. The off-site transportation for waste hauling will be contracted separate from Clean Harbors' scope of work, but will be coordinated with during the project. The following equipment is anticipated for this project:

- One (1) skid steer loader with attachments for clearing and grubbing

- One (1) trenching unit for the installation of silt fence
- One (1) Excavator for soil excavation and removal, oxidant mixing, well and structure removal, and soil loading. This may be increased to two excavators during the course of the project.
- One (1) front end loader for stockpile management and backfill placement
- One (1) haul truck for stockpile management and backfill management. This may be increased to two during course of the project.
- One (1) dozer for final grading and topsoil placement
- One (1) roller for compaction of haul road
- One (1) water truck for dust control and oxidant mixing
- One (1) office trailer for on-site management. A generator will be included for power supply.
- One (1) 20,000 gallon temporary groundwater storage tank with secondary containment
- One (1) Portable Truck Scale
- Up to three (3) site vehicles for the crew.

CLEARING AND GRUBBING / STORM WATER CONTROL INSTALLATION

Clean Harbors will begin on-site work by clearing out existing vegetation and weeds from the site. The site crew will utilize both hand tools and a skid steer to complete this work. The skid steer will have attachments included to aid in the mowing or cutting of the vegetation. The removed vegetation will be placed to the side and later shipped off-site for disposal.

Clean Harbors will then begin the installation of storm water controls. Silt fence will be installed the north of the Area 3 excavation, adjacent to the creek channel. Silt curtain will be place across the creek channel to the west of Area 3 to protect any sediment flow into the Little Menomonee River. An earthen berm will be constructed around the extents of the Area 1 excavation. This berm will be placed along the north, west, and south boundaries of the excavation using existing on-site soil. Clean Harbors will install the silt fencing with the use of a trenching unit and hand tools, and earthen berm with a skid steer and/or excavator.

INSTALLATION OF TEMPORARY FEATURES

Clean Harbors will then begin installing the temporary haul road on-site. Limestone screening material (in accordance with the contract specifications) will be imported on-site. The imported material will placed along the haul route with a front end loader or dozer. A water truck and compaction roller will be used to compact the limestone and ensure a smooth path for trucks and other on-site vehicles/equipment.

The decontamination pad will be prepared at a location adjacent to the site trailer. The decontamination will be constructed using a 15 mil plastic liner, limestone screening, and a collection sump lined. The decontamination pad will be installed with a loader and/or dozer to place the limestone screening. The truck scale will be placed adjacent to or on the decontamination pad after it is completed.

Proposed stockpile areas will be constructed to the south of Area 1, and to the west of Area 2. The stockpile areas will be constructed with 15 mil plastic liner, and the boundaries will be placed with an earthen berm or straw waddle.

Clean Harbors will remove existing fencing on-site, and store some of the fencing material for re-use. Temporary fencing will then be installed along the north, east, and south boundaries of the site. The temporary fencing will be comprised of chain link fabric, with posts installed every 12 feet. The temporary fencing will be installed by a subcontractor at the direction of Clean Harbors.

A 20,000 gallon frac tank will be mobilized to the site for the collection of groundwater during excavation operations. Groundwater encountered during excavation will be pumped using a 3" hosing and a 3" trash pump. The frac tank will be placed in a secondary containment pad during on-site storage. During excavation activities, the bottom of the excavation will be graded to allow any water to flow to collection sumps within the excavation. Depending on the excavation conditions, trenches may be dug around the perimeter of the excavation and sloped to collection points.

REMOVAL OF EXISTING SHEET PILING / INSTALLATION OF SHEET PILING

Clean Harbors will mobilize a crane and vibratory hammer through a subcontractor to mobilize to the site. The crane and vibratory hammer will be used to first remove approximately 150 linear feet of the existing sheet piling in area 2. Then the crane will be moved to Area 3 to remove approximately 50 linear feet of existing sheeting in area 3. The sheeting will be placed on plastic sheeting on-site, and at a later time loaded out using an excavator for off-site disposal.

The crane and vibratory hammer will then be moved to Area 1. Clean Harbors will install approximately 65 linear feet of PZ27 sheeting to the east of the Area 1 excavation. Sheeting will be installed to a depth of 20-30' bgs. A sheeting/shoring plan will be provided to WI DNR oversight prior to installation of the sheeting on-site. The vibratory hammer and crane will then be demobilized off-site until the sheeting is removed during demobilization activities.

EXCAVATION OF THE SOIL IMPACT AREAS

After Clean Harbors has completed the installation of the sheet piling, the crew will begin excavation in Area 3. The entire excavation in Area 3 will be directly loaded into haul trucks (3rd party vehicles contracted separately) for off-site disposal. The excavator will be used to remove soil from the excavation, and load directly into the trucks. As the excavation gets deeper, the excavator may transfer the soil the front end loader for loading into the trucks. After excavation of Area 3 is completed, Clean Harbors will import soil from off-site to backfill the excavation. Limestone screening and silty clay will be used to backfill the excavation in accordance with the project specifications. The front end loader and/or dozer

will be used to place and compact the soil in Area 3. The erosion control mat detailed in the project specifications will be placed on the ground surface once backfill is completed at Area 3.

Clean Harbors will then begin excavating the low level impact soil (0-4' bgs) from Area 2. This soil will be placed in the stockpile area adjacent to Area 2. The excavator will then excavate the higher impact soil (4' – 16' bgs) and load directly into third party haul trucks for off-site disposal. When the excavator cannot reach the staged trucks, the impacted soil will be placed (as near as possible) into staging piles within the excavation area. The front end loader will move soil from the staging piles into the haul trucks.

Clean Harbors will continue the same process in Area 1 as described in Area 2 above. Depending on site access and availability of off-site trucking, Area 1 and 2 may be done sequentially or concurrently.

OVERBURDEN BACKFILL AND OXIDANT MIXING

Once the loadout of the high level impact soil is completed, Clean Harbors will begin placing the low level impact soil back into the Area 2. The soil will be placed in the excavation using the excavator and/or front end loader. The low level impacted soil will be mixed with the specified oxidant material (Oxygen Biochem) and water in the excavation with the excavator. The oxidant material will be added as a 0.7 – 1% (by weight) mixture. Lime stabilizing agent will be added to the mixture as specified in the contract documents. This mixture will then be compacted using the front end loader, and will comprise the initial 4' of backfill in the excavation.

Clean Harbors will continue the same process in Area 1 as described in Area 2 above. Depending on site access and availability of equipment, Area 1 and 2 may be done sequentially or concurrently.

BACKFILL OF AREAS 1 AND 2

Clean Harbors will backfill the remainders of Areas 1 and 2 once the initial oxidant mixing is completed. The dozer will be used to remove the temporary access road near the river, and place as backfill in the Area 2 excavation. The remainder of the excavation will be backfilled with silty clay, and placed with a front end loader and/or dozer. The process will be completed for Area 1. Water will be applied to the silty clay during backfill to optimize compaction to the top grade.

Final grading of Areas 1, 2, and 3 will be completed with the dozer to match existing grade. After the backfilling has been complete, 6" of topsoil will be places on the impacted areas. The topsoil will be imported from off-site, and placed with a loader or dozer. The topsoil may occur immediately after backfilling, or after the other restoration pieces are completed (see below).

DEMOLITION AND REMOVAL

At the conclusion of backfilling, Clean Harbors will begin the demolition and removal phase of the project Clean Harbors will remove and/or abandon the site monitoring wells that have been identified in the project specifications. All sampling sumps and injection points also identified will be removed and disposed of as well. The shed structure on-site will be demolished next. Clean Harbors will work with the WI DNR oversight to ensure all material within the structure can be demolished, or needs to be removed prior to that. (NOTE: Clean Harbors does not anticipate any hazardous material or waste within the shed. Any material within this shed outside the scope of work will be a modification to the contract.) All material demolished from the site will be stockpiled, and loaded out for disposal at an off-site facility.

FINAL RESTORATION

After demolition of the monitoring wells and shed structure are complete, Clean Harbors will begin the final cleanup and restoration on-site.

Clean Harbors subcontractor will mobilize to the site to remove the temporary fencing, and install 600 linear feet of the final fencing. After fence replacement is completed, Clean Harbors use the dozer to regrade the surrounding and adjacent area. The collection sump/trench in the decontamination area will be filled back in and compacted (the overall decontamination pad area will remain).

As described above, Clean Harbors will haul in topsoil to grade over the impacted locations at Areas 1, 2, and 3. The topsoil will be placed by a dozer or front end loader. Seeding will then be applied to the affected areas. Once this is completed, Clean Harbors will remove storm water controls from the site.

Once all final restoration activities are completed, Clean Harbors will demobilize all equipment, materials, and personnel from the site.

SCHEDULE

The site work is scheduled to commence the week of August 28th. The duration of the project is projected to be 3 months. Figure 1 provides a schedule of the project tasks with expected durations.

Figure 1: Project Schedule

WDNR-Former Moss-American Facility

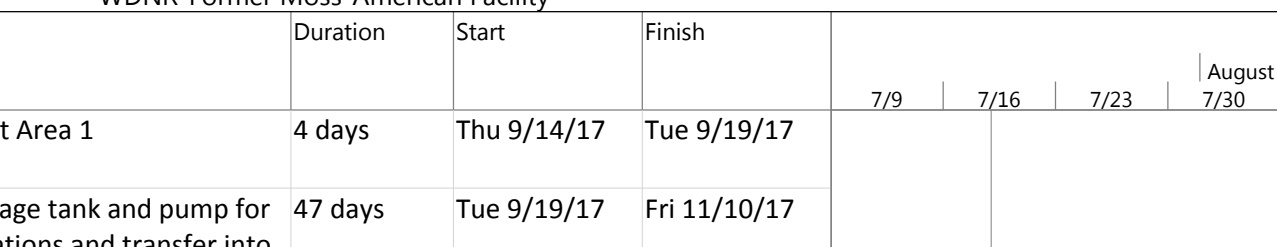
ID	% Comp	Task Mode	Task Name	Duration	Start	Finish
1	10...		Notice of Award	0 days	Tue 7/25/17	Tue 7/25/17
2	99%		Preconstruction Submittals	30.25 days	Tue 7/25/17	Sat 8/26/17
3	0%		Notice to Proceed	0 days	Thu 8/31/17	Thu 8/31/17
4	**0%**		**Site Remediation Construction**	**76 days**	**Thu 8/31/17**	**Fri 11/24/17**
5	0%		Mobilization	1 day	Thu 8/31/17	Thu 8/31/17
6	0%		clearing and grubbing	3 days	Fri 9/1/17	Tue 9/5/17
7	0%		Utility locate and install erosion control features	2 days	Tue 9/5/17	Thu 9/7/17
8	0%		Install temporary features and construct/improve the site access road	5 days	Thu 9/7/17	Wed 9/13/17
9	0%		Construct the decontamination pad and prepare areas for stockpiles	2 days	Wed 9/13/17	Fri 9/15/17
10	0%		Install temporary fence and remove 600 ft of existing fence	4 days	Fri 9/15/17	Wed 9/20/17
11	0%		Remove sheet piling from Areas 2 & 3	6 days	Thu 9/7/17	Thu 9/14/17

Project: Former Moss-American
Date: Sat 8/26/17

Task	Inactive Summary	External Tasks
Split	Manual Task	External Milestone
Milestone	Duration-only	Deadline
Summary	Manual Summary Rollup	Progress
Project Summary	Manual Summary	Manual Progress
Inactive Task	Start-only	
Inactive Milestone	Finish-only	

WDNR-Former Moss-American Facility

ID	% Comp	Task Mode	Task Name	Duration	Start	Finish
12	0%		Install 65 LF of sheet piling at Area 1	4 days	Thu 9/14/17	Tue 9/19/17
13	0%		Install temporary water storage tank and pump for impacted water from excavations and transfer into tankers for offsite disposal	47 days	Tue 9/19/17	Fri 11/10/17
14	0%		Excavate and load impacted soil at Area 3	1 day	Fri 9/15/17	Sat 9/16/17
15	0%		Backfill Area 3, grade and place erosion control matts	1 day	Sat 9/16/17	Mon 9/18/17
16	0%		Excavate and stockpile low-level impacted soil from Areas 1 & 2	4 days	Wed 9/20/17	Sat 9/23/17
17	0%		Excavate and load impacted soil at Areas 1 & 2	16 days	Mon 9/25/17	Thu 10/12/17
18	0%		Transport low-impacted soil from stockpiles and place into excavations at Areas 1 & 2 and mix with Oxygen BioChem	15 days	Thu 10/12/17	Sat 10/28/17
19	0%		Remove part of the access road near the river and place in Area 2 excavation as backfill	2 days	Sat 10/28/17	Tue 10/31/17
20	0%		Import and place backfill into excavations 1 & 2	9 days	Tue 10/31/17	Fri 11/10/17
21	0%		Remove monitoring wells, sampling sumps and injection points	3 days	Fri 11/10/17	Tue 11/14/17
22	0%		Demolish and remove site remediation shed	1 day	Fri 11/10/17	Sat 11/11/17



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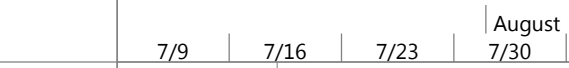
WDNR-Former Moss-American Facility

ID	% Comp	Task Mode	Task Name	Duration	Start	Finish
23	0%		Replace 600 LF of site fencing and remove the temporary fence	4 days	Tue 11/14/17	Sat 11/18/17
24	0%		Grade affected areas	1 day	Sat 11/18/17	Sat 11/18/17
25	0%		Place top soil at Areas 1 & 2	1 day	Mon 11/20/17	Mon 11/20/17
26	0%		Remove erosion control features and decontamination pad	1 day	Tue 11/21/17	Tue 11/21/17
27	0%		Reseed affected areas	2 days	Wed 11/22/17	Thu 11/23/17
28	0%		Demobilization of personnel and equipment for site remediation activities	1 day	Fri 11/24/17	Fri 11/24/17



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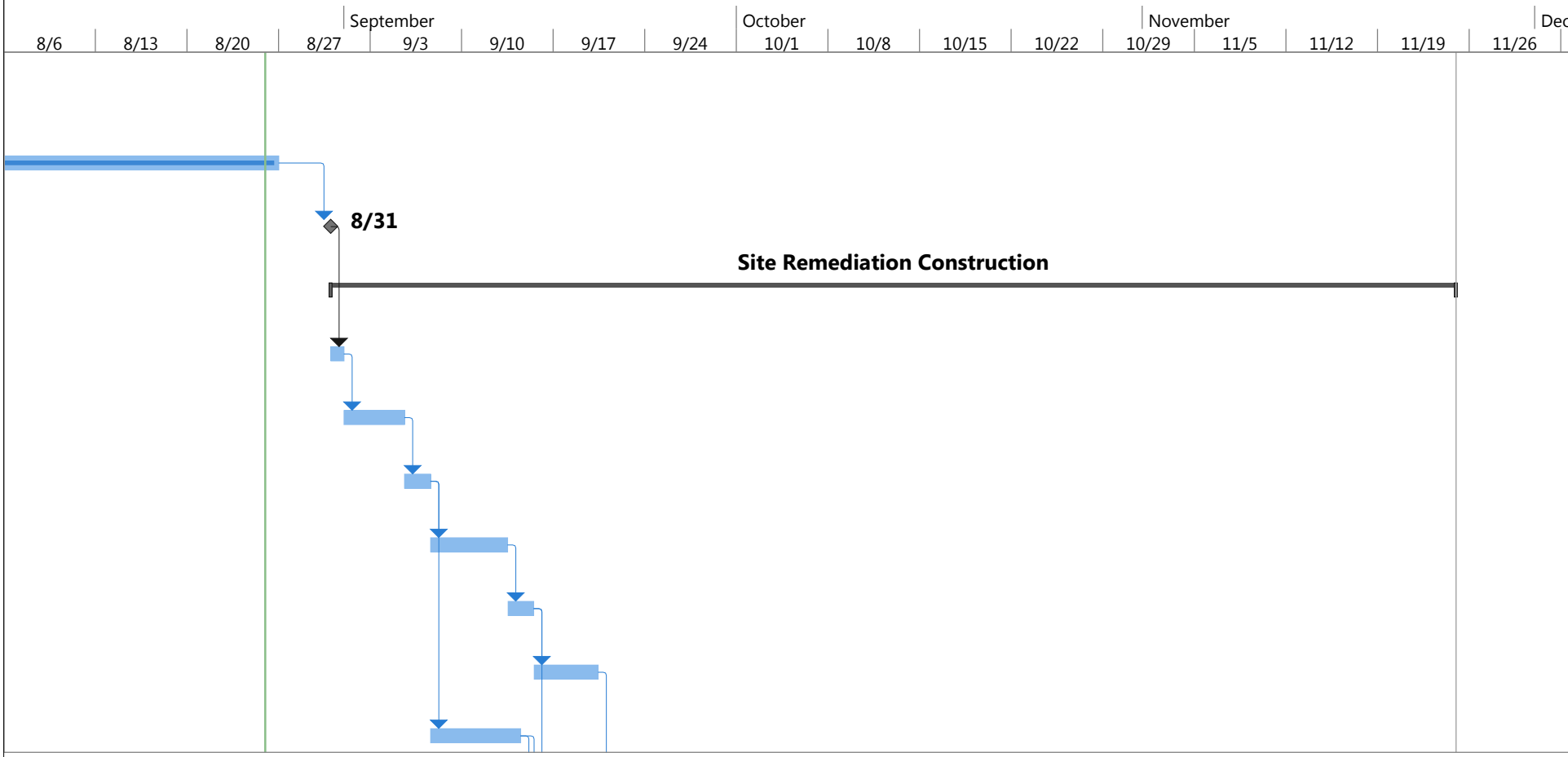
WDNR-Former Moss-American Facility



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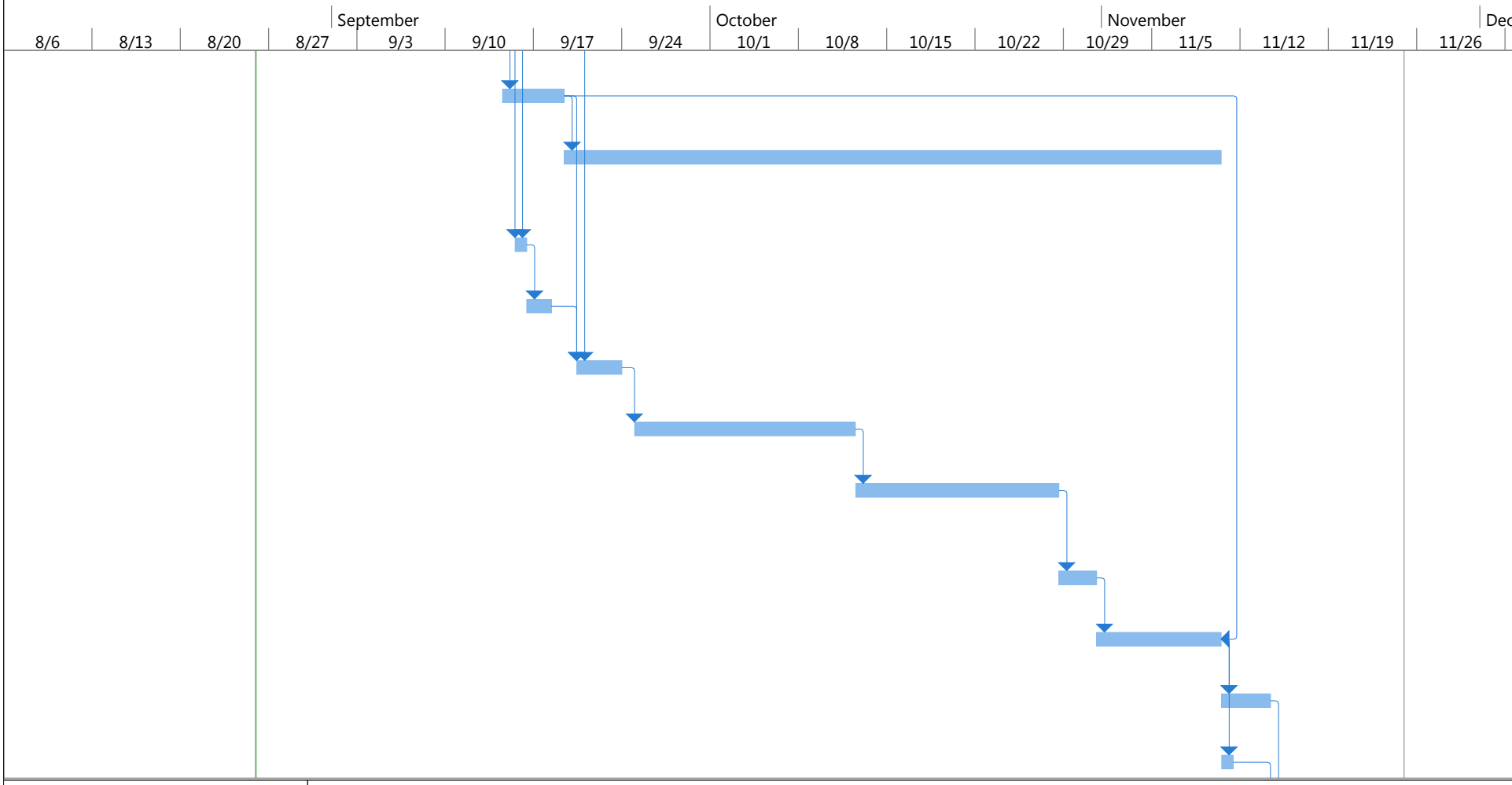

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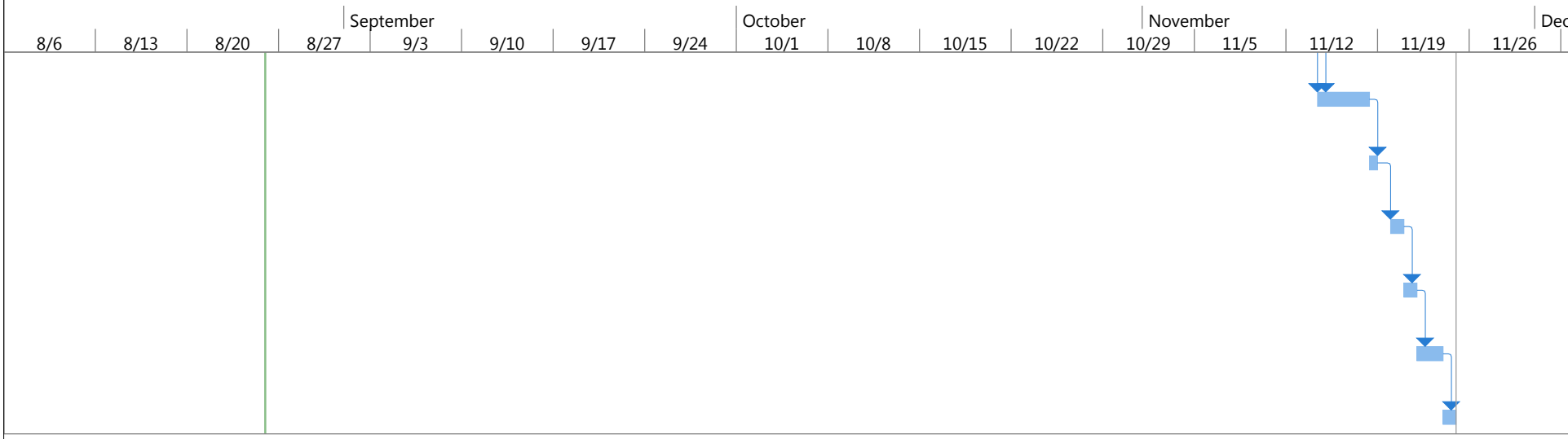

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