

**NEW HAVEN HARBOR  
CONNECTICUT  
NAVIGATION IMPROVEMENT PROJECT**

**DRAFT INTEGRATED FEASIBILITY REPORT  
AND ENVIRONMENTAL IMPACT STATEMENT**

**APPENDIX L  
AIR QUALITY ANALYSIS  
AND  
RECORD OF NON-APPLICABILITY**



## **RECORD OF NON-APPLICABILITY (RONA)**

### **Emissions Calculations for:**

New Haven Harbor Navigation Improvement Project  
New Haven, Connecticut

**GENERAL CONFORMITY - RECORD OF NON-APPLICABILITY**

**Project/Action Name:** New Haven Harbor  
Navigation Improvement Project  
New Haven, Connecticut

**Project/Action Point of Contact:** Joseph B. MacKay,  
Chief, Environmental Resources Section  
Phone: 978-318-8142

General Conformity under the Clean Air Act, Section 176 has been evaluated for the project described above according to the requirements of 40 CFR 93, Subpart B. The requirements of this rule are not applicable to this project/action because:

Total direct and indirect emission from this project/action are estimated at less than 100 tons for Ozone per year, and are below the conformity threshold value established at 40 CFR 93.153(b) of 100 tons/year of Ozone;

**AND**

The project/action is not considered regionally significant under 40 CFR 93.153(i).

Supporting documentation and emissions estimates are:

- (X) ATTACHED
- (X) APPEAR IN THE NEPA DOCUMENTATION (Section 7.12)
- ( ) OTHER

**SIGNED**

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*Jay MacKay, Chief, Environmental Resources Section*

**Emissions Calculations for the New Haven Harbor Navigation Improvement Project**

**General Conformity Review and Emission Inventory for the New Haven Harbor Improvement Project**  
 Estimates from Project Manager & Cost Engineer  
 5-Jun-18

**YEAR 2021**

1	2	3	4	5	6	7	8	9	10	11
Equipment/Engine Category	Project Emission Sources and Estimated Power						NOx Emission Estimates		VOC Emission Estimates	
	# of				# of Calendar		NOx	NOx	VOC	VOC
	Engines	hp	LF	hrs/year	Years	hp-hr	EF	Emissions	EF	Emissions
							(g/hp-hr)	(tons)	(g/hp-hr)	(tons)
Mechanical Dredge	1	5000	0.43	1773	1	3,811,950	9.200	38.66	1.300	5.46
Work Tug (Mechanical Dredge attendant)	1	250	0.43	1773	1	190,598	9.200	1.93	1.300	0.27
Crew/Survey Workboat	2	100	0.43	1773	1	152,478	9.200	1.55	1.300	0.22
Derrick	2	150	0.43	1773	1	228,717	9.200	2.32	1.300	0.33
Towing Tugboat	1	3000	0.43	1773	1	2,287,170	9.200	23.19	1.300	3.28
Dump Scow	2	50	0.43	1773	1	76,239	9.200	0.77	1.300	0.11
Hydraulic Dredge	1	1700	0.43	0	1	-	9.200	0.00	1.300	0.00
Work Tug (Hydraulic Dredge Attendant)	2	150	0.43	0	1	-	9.200	0.00	1.300	0.00
Crew/Survey Workboat	1	100	0.43	0	1	-	9.200	0.00	1.300	0.00
Derrick	2	150	0.43	0	1	-	9.200	0.00	1.300	0.00
Booster	1	1600	0.43	0	1	-	9.200	0.00	1.300	0.00
Work Tug (Blast Attendant)	1	250	0.43	805	1	86,538	9.200	0.88	1.300	0.12
Towing Vessel (Blasting)	1	3000	0.43	805	1	1,038,450	9.200	10.53	1.300	1.49
<b>Total Emissions</b>							<b>NOx Total</b>	<b>79.83</b>	<b>VOC Total</b>	<b>11.28</b>

	hrs	%
Dredge Interior Channel	1773	90%
Blasting	805	60%

**Horsepower Hours**

hp-hr = # of engines\*hp\*LF\*hrs/day\*days of operation

**Load Factors**

Load Factor (LF) represents the average percentage of rated horsepower used during a source's operational profile. LFs used are from EPA (2010) Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling. US EPA, NR-005d, 47 pp.

**Emission Factors**

NOx Emissions Factor for Off-Road Construction Equipment is 9.20 g/hp-hr  
 VOC Emissions Factor for Off-Road Construction Equipment is 1.30 g/hp-hr

Emissions (g) = Power Demand (hp-hr) \* Emission Factor (g/hp-hr)

Emissions (tons) = Emissions (g) \* (1 ton/907200 g)

**General Conformity Review and Emission Inventory for the New Haven Harbor Improvement Project**

Estimates from Project Manager & Cost Engineer  
5-Jun-18

YEAR 2022

1	2	3	4	5	6	7	8	9	10	11
Equipment/Engine Category	Project Emission Sources and Estimated Power						NOx Emission Estimates		VOC Emission Estimates	
	# of Engines	hp	LF	hrs/year	# of Calendar Years	hp-hr	NOx EF (g/hp-hr)	NOx Emissions (tons)	VOC EF (g/hp-hr)	VOC Emissions (tons)
Mechanical Dredge	1	5000	0.43	1695	1	3,644,250	9.200	36.96	1.300	5.22
Work Tug (Mechanical Dredge attendant)	1	250	0.43	1695	1	182,213	9.200	1.85	1.300	0.26
Crew/Survey Workboat	2	100	0.43	1695	1	145,770	9.200	1.48	1.300	0.21
Derrick	2	150	0.43	1695	1	218,655	9.200	2.22	1.300	0.31
Towing Tugboat	1	3000	0.43	1695	1	2,186,550	9.200	22.17	1.300	3.13
Dump Scow	2	50	0.43	1695	1	72,885	9.200	0.74	1.300	0.10
Hydraulic Dredge	1	1700	0.43	1350	1	986,850	9.200	10.01	1.300	1.41
Work Tug (Hydraulic Dredge Attendant)	2	150	0.43	1350	1	174,150	9.200	1.77	1.300	0.25
Crew/Survey Workboat	1	100	0.43	1350	1	58,050	9.200	0.59	1.300	0.08
Derrick	2	150	0.43	1350	1	174,150	9.200	1.77	1.300	0.25
Dozer	1	440	0.43	1350	1	255,420	9.200	2.59	2.300	0.65
Booster	1	1600	0.43	1350	1	928,800	9.200	9.42	1.300	1.33
Work Tug (Blast Attendant)	1	250	0.43	530	1	56,975	9.200	0.58	1.300	0.08
Towing Vessel (Blasting)	1	3000	0.43	530	1	683,700	9.200	6.93	1.300	0.98
<b>Total Emissions</b>							<b>NOx Total</b>	<b>99.06</b>	<b>VOC Total</b>	<b>14.28</b>

	hrs	%
Dredge Interior Channel	195	10%
Dredge Bend (ordinary)	250	30%
Dredge manuv Area	1050	100%
Dredge turning Basin	200	100%
<b>Total</b>	<b>1695</b>	
Hydraulic Dredge	1350	100%
Blasting	530	40%

**Horsepower Hours**

hp-hr = # of engines\*hp\*LF\*hrs/day\*days of operation

**Load Factors**

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**Emission Factors**

NOx Emissions Factor for Off-Road Construction Equipment is 9.20 g/hp-hr  
VOC Emissions Factor for Off-Road Construction Equipment is 1.30 g/hp-hr

Emissions (g) = Power Demand (hp-hr) \* Emission Factor (g/hp-hr)

Emissions (tons) = Emissions (g) \* (1 ton/907200 g)

**General Conformity Review and Emission Inventory for the New Haven Harbor Improvement Project**  
 Estimates from Project Manager & Cost Engineer  
 5-Jun-18  
 YEAR 2023

1	2	3	4	5	6	7	8	9	10	11
Equipment/Engine Category	Project Emission Sources and Estimated Power						NOx Emission Estimates		VOC Emission Estimates	
	# of Engines	hp	LF	hrs/year	# of Calendar Years	hp-hr	NOx EF (g/hp-hr)	NOx Emissions (tons)	VOC EF (g/hp-hr)	VOC Emissions (tons)
Mechanical Dredge	1	5000	0.43	1910	1	4,106,500	9.200	41.64	1.300	5.88
Work Tug (Mechanical Dredge attendant)	1	250	0.43	1910	1	205,325	9.200	2.08	1.300	0.29
Crew/Survey Workboat	2	100	0.43	1910	1	164,260	9.200	1.67	1.300	0.24
Derrick	2	150	0.43	1910	1	246,390	9.200	2.50	1.300	0.35
Towing Tugboat	1	3000	0.43	1910	1	2,463,900	9.200	24.99	1.300	3.53
Dump Scow	2	50	0.43	1910	1	82,130	9.200	0.83	1.300	0.12
Hydraulic Dredge	1	1700	0.43	0	1	-	9.200	0.00	1.300	0.00
Work Tug (Hydraulic Dredge Attendant)	2	150	0.43	0	1	-	9.200	0.00	1.300	0.00
Crew/Survey Workboat	1	100	0.43	0	1	-	9.200	0.00	1.300	0.00
Derrick	2	150	0.43	0	1	-	9.200	0.00	1.300	0.00
Booster	1	1600	0.43	0	1	-	9.200	0.00	1.300	0.00
Work Tug (Blast Attendant)	1	250	0.43	0	1	-	9.200	0.00	1.300	0.00
Towing Vessel (Blasting)	1	3000	0.43	0	1	-	9.200	0.00	1.300	0.00
<b>Total Emissions</b>							<b>NOx Total</b>	<b>73.71</b>	<b>VOC Total</b>	<b>10.42</b>

	hrs	%
Dredge Bend (ordinary)	580	70%
Dredge Bend (rock)	75	100%
Dredge Entrance Channel	910	100%
Dredge Entrance Channel Extension	345	100%
	<b>1910</b>	

**Horsepower Hours**

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 VOC Emissions Factor for Off-Road Construction Equipment is 1.30 g/hp-hr

Emissions (g) = Power Demand (hp-hr) \* Emission Factor (g/hp-hr)

Emissions (tons) = Emissions (g) \* (1 ton/907200 g)