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Mr William H Regan, Jr, Chief Environmental Projects Branch 2 Division of Site Safety and Environmental Analysis US Nuclear Regulatory Commission Washington, DC 20555

MIDLAND PLANT

DOCKET NO 50-329, 50-330

ENVIRONMENTAL REPORT (OLS)

AQUATIC ECOLOGY PARAMETERS RECOMMENDED FOR PRE- AND POSTOPERATIONAL

MONITORING IN THE TITTABAWASSEE RIVER NEAR THE MIDLAND PLANT

FILE: 0505.5 SERIAL: 6616

REFERENCE: Meeting with Michigan Department of Natural Resources and U S Nuclear Regulatory Commission on February 1, 1979 in Lansing, Michigan

Aquatic ecology monitoring activities for preoperational and operational assessments of the Tittabawassee River are provided in the attached table. We request that the U.S. Nuclear Regulatory Commission confirm the adequacy of this monitoring program. Consumers is also requesting approval of this program from the Michigan Department of Natural Resources.

If further clarification is needed, please contact R F Green at (517) 788-0350.



# PREOPERATIONAL AND POSTOPERATIONAL AQUATIC MONITORING PROGRAM AT MIDLAND PLANT

PARAMETER	TECHNIQUE	PREQUENCY	SAMPLING LOCATIONS
	Periphytometer II	April, June, August, October  April, June, August, October	<ol> <li>Transect A, Approximately 300 ft upstream of the Midland Plant intake.</li> <li>Transect B, Approximately 300 ft downstream of the Midland Plant intake.</li> <li>Transect C, Approximately 500 ft downstream of the proposed Midland Plant discharge.</li> <li>Transect D, Approximately 300 ft downstream of Lingle Drain.</li> <li>Transect E, Approximately 200 ft upstream of the Freeland Road Bridge.</li> <li>Sampling locations within a transect shall be selected to represent extremes of river flow velocity and to compare the effects of thermal addition.</li> </ol>
Periphyton	Artificial Substrates	April, June, August, October	Locations to coincide with Periphytometer II sampling.
Macroinvertebrates	Triplex Foner	June, August, October	Transects A/B/C/D/S, as above. B Three Locations across each transect.
Sediment	Triplex Ponar	June, October	To coincide with macroinvertebrate Triplex Ponar collections.
Fisheries		March through November	Approximately 300 feet of shoreline on each side of the Tittabawassee River:  1. Immediately upstream of the Midland Plant intake.  2. Immediately upstream and downstream of Dow's tertiary pond discharge.  3. Immediately downstream of the proposed Midland Plant discharge.  4. 300 feet downstream of Lingle Drain.  5. Near the Freeland Road Bridge.
	Electroshock	Bimonthly September through Mid-December	Shoreline areas in the vicinity of:  1. Sanford Lake.  2. Pine and Chippewa Rivers.  3. Saginaw Bay.  4. Midland Plant.
	Seine	March through November	Approximately 200 feet of shoreline on each side of the Cittabayassee River near Transects A/B/C/D/E.
	Hoop Net	April, June, August, October	Transects A/B/C/D/E. Three locations across each transect.
	Oblique Tow With a 1/2 m Plankton Net	Weekly April through August Simonthly through October - Day and Night	Three locations across Transect A.
		Weekly April and May	Tows in the vicinity of:  1. Sanford Lake.  2. Pine and Chippewa Rivers.  3. Saginaw Bay.
		Weekly April through August, Simonthly through October -	
Zenthyeplankton  Entrainment	Neuston Net	Two 24-hour periods per week when pond filling occurs on a sinimum of 4 days during a week. Triplicate day and night samples per collection day.	Three locations across Transect A.  Cooling pond intake.
Impingement		All fishes impinged shall be collected.	Midland Plant intake.

ATransects A/B/C/D/E, as described for periphyton, are identical sampling areas for all parameters. Three locations across a transect, chosen to characterize each shoreline and midstream.

## PREOPERATIONAL AND POSTOPERATIONAL AQUATIC MONIFORING PROGRAM AT MIDLE PLANT

PARAMETER	TECHNIQUE	FREQUENCY	CAMPLING LOCATIONS
	Periphytometer II Natural Substrates	April, June, August, October  April, June, August, October	<ol> <li>Transect A, Approximately 300 ft upstream of the Midland Plant intake.</li> <li>Transect B, Approximately 300 ft downstream of the Midland Plant intake.</li> <li>Transect C, Approximately 500 ft downstream of the proposed Midland Plant discharge.</li> <li>Transect D, Approximately 300 ft downstream of Lingle Drain.</li> <li>Transect E, Approximately 200 ft upstream of the Freeland Road Bridge.</li> <li>Sampling locations within a transect shall be selected to represen extremes of river flow velocity and to compare the effects of thermal addition.</li> </ol>
Periphyton	Artificial Substrates	April, June, August, October	Locations to coincide with Periphytometer II sampling.
facroinvertebrates	Triplex Poner	June, August, October	Transects A/B/C/D/E, as above. 8 Three locations across each transect.
Sediment	Triplex Popar	June, October	To coincide with macroinvertebrate Triplex Ponar collections.
Fisheries		March through November	Approximately 300 feet of shoreline on each side of the Tittabawassee River:  1. Immediately upstream of the Midland Plant intake.  2. Immediately upstream and downstream of Dow's tertiary pond discharge.  3. Immediately downstream of the proposed Midland Plant discharce 3. 300 feet downstream of Lingle Drain.  5. Near the Freeland Road Bridge.
	Electroshock	Bimonthly September through	Shoreline areas in the vicinity of:  1. Sanford Lake.  2. Pine and Chippewa Rivers.  3. Saginaw Bay.  4. Midland Plant.
	Seine	March through November	Approximately 200 feet of shoreline on each side of the Tittabawassee River near Transects A/3/C/D/R.
	Hoop Net	April, June, August, October	Transects A/B/C/D/E. Three locations across each transect.
[chthyon] unkton		Weekly April through August Bimonthly through October - Day and Night	Three locations across Transect A.
	Oblique Tow With a 1/2 m Plankton Net	Weekly April and May	Tows in the vicinity of:  1. Sanford Lake.  2. Pine and Chippewa Rivers.  3. Saginaw Bay.
	Neuston Net	Weekly April through August, Bimonthly through October - Day and Night	Three locations scross Transect A.
Entrainment	1/2 m Flankton Net	Two 24-hour periods per week when pond filling occurs on a minimum of 4 days during a week. Triplicate day and night samples per collection day.	Cooling pond intake.
Inpingement	_	All fishes impinged shall be collected.	Midland Plant intake.

 $<sup>^{8}</sup>$ Transects A/B/C/D/E, as described for periphyton, are identical sampling areas for all parameters.  $^{9}$ Three locations across a transect, chosen to characterize each shoreline and midstream.

## PREOFERATIONAL AND POSTOPERATIONAL AQUATIC MONITORING PROGRAM AT MIDLAND PLAST

PARAMETER	TECHNIQUE	FREQUENCY	SAMPLING LOCATIONS
	Periphytometer II  Netural Substrates	April, June, August, October  April, June, August, October	<ol> <li>Transect A, Approximately 300 ft upstream of the Midland Plant intake.</li> <li>Transect B, Approximately 300 ft downstream of the Midland Plant intake.</li> <li>Transect C, Approximately 500 ft downstream of the proposed Midland Plant discharge.</li> <li>Transect D, Approximately 300 ft downstream of Lingle Brain.</li> <li>Transect E, Approximately 200 ft upstream of the Freeland Road Bridge.</li> <li>Sampling locations within a transect shall be selected to represent extremes of river flow velocity and to compare the effects of thermal addition.</li> </ol>
Periphyton	Artificial Substrates	April, June, August, October	Locations to coincide with Periphytometer II sampling.
Macroinvertebrates	Triplex Poner	June, August, October	Transects A/B/C/D/B, as above. a Three locations across each transect.
Sediment	Triplex Ponar	June, October	To coincide with macroinvertebrate Triplex Ponar collections.
Fisheries		March through November	Approximately 300 feet of shoreline on each side of the Tittabawassee River:  1. Immediately upstream of the Midlani Plant intake.  2. Immediately upstream and downstream of Dow's tertiary pond discharge.  3. Immediately downstream of the proposed Midland Plant discharge  4. 300 feet downstream of Lingle Drain.  5. Near the Freeland Road Bridge.
	Electroshock	Bimonthly September through Mid-December	Shoreline areas in the vicinity of: 1. Sanford Lake. 2. Pine and Chippewa Rivers. 3. Saginaw Bay. 4. Midland Plant.
	Seine	March through November	Approximately 200 feet of shoreline on each side of the Tittabayassee River near Transects A/B/C/D/E.
	Hoop Net	April, June, August, October	Transects A/B/C/D/E. Three locations across each transect.
Innshyoplanaton	Oblique Tow With a 1/2 m Plankton Net	Weekly April through August Simonthly through October - Day and Right	Three locations across Transect A.
		Weekly April and May	Tows in the vicinity of:  1. Sanford Lake.  2. Pine and Chippeva Rivers.  3. Saginaw Bay.
	Neuston Net	Weekly April through August, Bimonthly through October - Day and Night	Three Locations across Transect A.
Entrainment	1/2 m Plankton Net	Two 24-hour periods per week when pond filling occurs on a minimum of 4 days during a week. Triplicate day and night samples per collection day.	Cooling pond intake.
Empingement		All fishes impinged shall be collected.	Midland Plant intake.

 $<sup>^{\</sup>rm a}$ Transects A/B/C/D/E, as described for periphyton, are identical sampling areas for all parameters.  $^{\rm b}$ Three locations across a transect, chosen to characterize each shoreline and midstream.

#### PREOPERATIONAL AND POSTOPERATIONAL AQUATIC MONITORING PROGRAM AT MIDLAND PLANT

PARAMETER	TECHNIQUE	FREQUENCY	SAMPLING LOCATIONS
	Periphytometer II	April, June, August, October  April, June, August, October	<ol> <li>Transect A, Approximately 300 ft upstream of the Midland Plant intake.</li> <li>Transect B, Approximately 300 ft downstream of the Midland Plant intake.</li> <li>Transect C, Approximately 500 ft downstream of the proposed Midland Plant discharge.</li> <li>Transect D, Approximately 300 ft downstream of Lingle Drain.</li> <li>Transect E, Approximately 300 ft upstream of the Freeland Road Bridge.</li> <li>Sampling locations within a transect shall be selected to represent extremes of river flow velocity and to compare the effects of thermal addition.</li> </ol>
Periphyton	Netural Substrates  Artificial Substrates	April, June, August, October	Locations to coincide with Periphytometer II sampling.
Macroinvertebrates	Triplex Poner	June, August, October	Transects A/B/C/D/E, as above. B Three locations across each transect.
Sediment	Triplex Ponar	June, October	To coincide with macroinvertebrate Triplex Popar collections,
Fasheries		March through November	Approximately 300 feet of shoreline on each side of the Tittabawassee River:  1. Immediately upstream of the Midland Plant intake.  2. Immediately upstream and downstream of Dow's tertiary gond discharge.  3. Immediately downstream of the proposed Midland Flant discharge.  4. 300 feet downstream of Dingle Drain.  5. Near the Freeland Road Bridge.
	Electroshock	Bimonthly September through Mid-December	Shoreline areas in the vicinity of:  1. Sanford Lake.  2. Pine and Chippewa Rivers.  3. Saginaw Bay.  4. Midland Flant.
	Seine	March through November	Approximately 200 feet of shoreline on each side of the Tittabawassee Biver near Transects A/B/C/D/E.
	Hoop Net	April, June. August, October	Transects A/B/C/D/E. Three locations across each transect.
	Oblique Tow With a 1/2 m Planaton Net	Weekly April through August Bimonthly through October - Day and Hight	Three locations across Transect A.
		Weekly April and May	Tows in the vicinity of:  1. Sanford Lake.  2. Pine and Chippewa Rivers.  3. Saginaw Bay.
[cnthyop]ankton	Meuston Net	Weekly April through August, Bisonthly through October - Day and Night	Three locations scross Transect A.
Sntrainment	1/2 m Plankton Net	Two 24-hour periods per week when pond filling occurs on a minimum of 4 days during a week. Triplicate day and night samples per collection day.	Cooling pond intake.
Impingement		All fishes impinged shall be collected.	Midland Plant Intake.

<sup>\*</sup>Transects A/B/C/D/E, as described for periphyton, are identical sampling areas for all parameters. Three locations across a transect, chosen to characterize each shoreline and midstream.

## PHEOPERATIONAL AND POSTOPERATIONAL AQUATIC MONITORING PROGRAM AT MIDLAND FLANT

PARAMETER	TECHNIQUE	FREQUENCY	SAMPLING LOCATIONS
Periphyton	Perirbytometer II Natural Substrates	April, June, August, October  April, June, August, October	<ol> <li>Transect A, Approximately 300 ft upstream of the Midland Plant intake.</li> <li>Transect B, Approximately 300 ft downstream of the Midland Flant intake.</li> <li>Transect C, Approximately 500 ft downstream of the proposed Midland Plant discharge.</li> <li>Transect D, Approximately 300 ft downstream of Lingle Drain.</li> <li>Transect E, Approximately 300 ft upstream of the Freeland Road Bridge.</li> <li>Sampling locations within a transect shall be selected to represent extremes of river flow velocity and to compare the effects of thermal addition.</li> </ol>
	Artificial Substrates	April, June, August, October	Locations to coincide with Periphytometer II sampling.
Macroinvertebrates	Triplex Poner	June, August, October	Transects A/B/C/D/E, as above. Three locations across each transect.
Sediment	Triplex Popar	June, October	To coincide with macroinvertebrate Triplex Ponar collections.
Fisheries		March through November  Bimonthly September through	Approximately 300 feet of shoreline on each side of the Tittabawassee River;  1. Immediately upstream of the Midland Plant intake.  2. Immediately upstream and downstream of Dow's tertiary pond discharge.  3. Immediately downstream of the proposed Midland Plant discharge b, 300 feet downstream of Lingle Drain.  5. Near the Freeland Road Bridge.  Shoreline areas in the vicinity of:  1. Sanford Lake.  2. Fine and Chippeva Rivers.  3. Saginaw Bay.  4. Midland Plant.
	Electroshock	Mid-December  March through November	Approximately 200 feet of shoreline on each side of the Tittabawasee River near Transects A/B/C/D/E.
	Hoop Net	April, June, August, October	Transects A/B/C/D/E. Three locations scross each transect.
Ishthycel apkton	Oblique Tow With	Weekly April through August Bimonthly through October - Day and Night	Three locations across Transect A.
	a 1/2 m Plankton Net	Weekly April and May	Tows in the vicinity of:  1. Sanford Lake.  2. Pine and Cnippewa Rivers.  3. Saginaw Bay.
	Seuston Net	Weekly April through August, Bimonthly through October - Day and Night	Three locations across Transect A.
Entrainment	1/2 m Plankton Net	Two 24-hour periods per week when pond filling occurs on a minimum of 4 days during a week. Triplicate day and night samples per collection day.	Cooling pond intake.
Impingement		All fishes impinged shall be collected.	Midland Plant intake.

Transects A/B/C/D/L, as described for periphyton, are identical sampling areas for all parameters. Three locations across a transect, chosen to characterize each shoreline and midstreem.

#### PREOPERATIONAL AND POSTOPERATIONAL AQUATIC MONITORING PROGRAM AT MIDLAND PLANT

PARAMETER	TECHNIQUE	FREQUENCY	SAMPLING LOCATIONS
	Periphytometer II	April, June, August, October  April, June,	<ol> <li>Transect A, Approximately 300 ft upstream of the Midland Plant intake.</li> <li>Transect B, Approximately 300 ft downstream of the Midland Plant intake.</li> <li>Transect C, Approximately 500 ft downstream of the proposed Midland Plant discharge.</li> <li>Transect D, Approximately 300 ft downstream of Lingle Drain.</li> <li>Transect E, Approximately 200 ft upstream of the Freeland Road Bridge.</li> <li>Sampling locations within a transect shall be selected to represent extremes of river flow velocity and to compare the effects of thermal addition.</li> </ol>
Periphyton	Natural Substrates  Artificial Substrates	August, October  April, June, August, October	Locations to coincide with Periphytometer II sampling.
Macroinvertebrates	Triplex Ponar	June, August, October	Transects A/B/C/D/E, as above. a Three locations across each transect.
Sediment	Triplex Ponar	June, October	To coincide with macroinvertebrate Triplex Ponar collections.
Fisheries	Electroshock	March through November  Bisonthly September through Mid-December	Approximately 300 feet of shoreline on each side of the Tittabavassee River:  1. Immediately upstream of the Midland Plant intake.  2. Immediately upstream and downstream of Dow's tertiary pond discharge.  3. Immediately downstream of the proposed Midland Plant discharge in 300 feet downstream of Lingle Drain.  5. Near the Freeland Soad Bridge.  Shoreline areas in the vicinity of:  1. Sanford Lake.  2. Pine and Chippeva Rivers.  3. Saginaw Bay.  4. Midland Plant.
	Seine	March through November	Approximately 200 feet of shoreline on each side of the Tittabayassee Blyer near Transects A/B/C/D/E.
	Hoop Net	April, June, August, October	Transects A/B/C/D/E. Three locations across each transect.
	Oblique Tow With a 1/2 m Plankton Net	Weekly April through August Bimonthly through October - Day and Night	Three locations across Transect A.
		Weekly April and May	Tows in the vicinity of:  1. Sanford Lake.  2. Pine and Chippewa Rivers.  3. Saginaw Bay.
Ichthyapl waten	Newston Net	Weekly April through August, Bimonthly through October - Day and Night	Three locations scross Transect A.
Entrainment	1/2 m Plankton Net	Two 24-hour periods per week when pond filling occurs on a minimum of 4 days during a week. Triplicate day and night samples per collection day.	Cooling pond intake.
Impingement		All fishes impinged shall be collected.	Midland Plant Intake.

 $<sup>^{</sup>b}$ Transects A/B/C/D/E, as described for periphyton, are identical sampling areas for all parameters.  $^{b}$ Three locat.... across a transect, chosen to characterize each shoreline and substream.