Objectives

- Assist regulators and developers throughout entire design and permitting process
- Identify most common site constraints
- Suggest documentation for each constraint
- Link to Flexible Treatment Options

Source: Barr
**Conduct Site Review:**
- Aerial Photos and Topographic Maps
- County Soil Surveys and other Soil Information as Available
- County Geologic Atlas
- Local Groundwater Levels
- DWSMA and Wellhead Protection Maps
- FEMA and Local Floodplain Maps
- Soil Borings and Site Survey
- MPCA Listing of Potentially Contaminated Sites
- Phase 1 and 2 Environmental Site Assessments
- TMDLs and Local Water Quality Standards
- Wetland Delineations, MNARAM Assessments, and Wetland Classifications
- Proposed Conditions, Conceptual/Preliminary Site Design
- Communication with Local Landowners, LGU, or Others Knowledgeable about the Site
- Site Inspection

**Define Performance Goal:**
1.1 inches over new and fully reconstructed impervious surfaces. (1)
Is the project new development, redevelopment or linear?

Does the project create one acre or more of new or fully reconstructed impervious surfaces?

redevelopment

No

Does the project disturb more than \( x \) acres of land

Yes

resourceful. naturally.
Does the project disturb more than x acres of land

Yes

No

Project is exempt from MIDS Volume control requirements

Yes

No

Is the project...
Is this a redevelopment project or are there zoning and land use requirements (density, parking, setbacks, etc.) that make the Performance Goal infeasible or cost-prohibitive?

Yes

Is BMP relocation possible?

No

Is this a redevelopment project or are there zoning and land use requirements (density, parking, setbacks, etc.) that make the Performance Goal infeasible or cost-prohibitive?

Yes

- Select Flexible Strategies
- Provide regulatory relief for infeasibility and original Performance Goal
- Select Flexible Treatment Option (FTO) Alternative No. 1
- Provide regulations, and/or cost estimates documenting infeasibility and cost-prohibitive nature of meeting the original Performance Goal
Investigate Off-Site Considerations:
1. Banking within watershed as defined by LGU with goal of:
   - **Linear**: 0.55 inches over impervious
   - **Nonlinear**: 1.1 inches over impervious
2. Cash as determined by LGU
3. Treatment on another project, as acceptable by LGU

Provide site survey, maps, regulations, and/or cost estimates documenting infeasibility and **cost-prohibitive** nature of meeting the original Performance Goal or FTO Alternatives, in addition to other documentation as required by LGU.

- Select Flexible Treatment Option (FTO) Alternative No. 2
- Provide regulations, and/or cost estimates documenting infeasibility and **cost-prohibitive** nature of meeting the original Performance Goal
MIDS Project Flexible Treatment Options (FTO)

The Flexible Treatment Options (FTO) alternatives presented here should be employed when the Performance Goal is not feasible and/or allowed. The designer should attempt to meet each alternative in the order presented, beginning with Alternative #1. The designer should document the reasons why the Performance Goal and rejected FTO Alternatives are not feasible and/or allowed.
Alternative #1
Applicant attempts to comply with the following conditions:
1.a. Achieve at least 0.55” volume reduction goal, and
1.b. Remove 75% of the annual TP load, and
1.c. Options considered and presented shall examine the merits of relocating project elements to address, varying soil conditions and other constraints across the site.

Alternative #2
Applicant attempts to comply with the following conditions:
2.a. Achieve volume reduction to the maximum extent practicable (as determined by the Local Authority), and
2.b. Remove 75% of the annual TP load, and
2.c. Options considered and presented shall examine the merits of relocating project elements to address, varying soil conditions and other constraints across the site.
Off-site Considerations:
Equivalent to the volume reduction Treatment Goal, off-site mitigation (including banking or cash, as determined by the Local Authority) can be used to protect the receiving water body. Off-site compliance and banking credits shall be achieved through a method that protects the receiving water using a method to be determined later in the MIDS Project.
Is the site located in a DWSMA, wellhead protection area, or within 200 feet of a drinking well?

Yes

Is infiltration in this location permitted by LGU, owner, and operator?

No

Yes

- Select Flexible Treatment Option (FTO) Alternative No. 2
- No infiltration practices allowed
- Explore non-infiltration volume reduction practices
- Provide DWSMA or well location map
Are there existing or proposed structures or infrastructure (e.g., utilities, buildings, roadway, easements) that make the Performance Goal infeasible or cost-prohibitive?

Yes

Is BMP relocation possible?

No

Is FTC...
Investigate Off-Site Considerations:
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Provide site survey, maps, and/or cost estimates documenting infeasibility and cost-prohibitive nature of meeting the original Performance Goal or FTO Alternatives, in addition to other documentation as required by LGU.

- Select Flexible Treatment Option (FTO) Alternative No. 2
- Provide regulations, and/or cost estimates documenting infeasibility and cost-prohibitive nature of meeting the original Performance Goal
Is karst present on site?

Yes

Conduct detailed site investigation (i.e., borings, excavations, consultation with a professional geologist).

No

Is karst present below the proposed BMP location?

Yes

Is BMP relocation onsite to a location without karst possible?

No

Yes
Select Flexible Treatment Option (FTO) Alternative No. 2
Provide regulations, and/or cost estimates documenting infeasibility and cost-prohibitive nature of meeting the original Performance Goal

Yes

Is BMP relocation onsite to a location without karst possible?

No
- Select Flexible Treatment Option (FTO) Alternative No. 2
- Provide regulations, and/or cost estimates documenting infeasibility and **cost-prohibitive** nature of meeting the original Performance Goal

Is BMP relocation onsite to avoid shallow groundwater and bedrock possible?

- No

Can BMP be raised?

- No

- Yes

Raise BMP enough to ensure 3 feet (preferably 10 feet) of soil between bottom of BMP and top of bedrock and groundwater.
Is there potential presence of contaminated soils and/or groundwater, or hotspot runoff?

Yes

Can hotspot or contamination be isolated or remediated to mitigate risk of increased contamination?

No

Yes

No
Can hotspot or contamination be isolated or remediated to mitigate risk of increased contamination?

Yes

No

- Select Flexible Treatment Option (FTO) Alternative No. 2
- No infiltration practices allowed
- Explore non-infiltration volume reduction practices
- Provide Phase I or II ESAs, or other documentation of potential contamination or hotspot runoff
- Provide documentation of extent of contamination and remediation alternatives considered
Is there potential for very low infiltrating soils (<0.2 inches per hour)?

Yes

Is BMP relocation onsite to a higher-infiltrating location possible?

No

Can BMP be sized to drain dry within 48 hours (24 hours in locations that are tributary to trout streams)?

No

Provide soil boring or infiltration test results documenting low-infiltrating soils.

Yes
Provide soil boring or infiltration test results documenting low-infiltrating soils.

Is FTO Alternative No. 1 (lower volume control standard) possible, allowing the BMP to drain within 48 hours (24 hours in locations that are tributary to trout streams)?

Yes

Select FTO Alternative No. 1
Is FTO Alternative No. 1 (lower volume control standard) possible, allowing the BMP to drain within 48 hours (24 hours in locations that are tributary to trout streams)?

Yes

Select FTO Alternative No. 1

No

- Select FTO Alternative No. 2
- Explore non-infiltration volume reduction practices
Is there potential for very high infiltrating soils (>8 inches per hour)? (3)

- Yes
  - Is BMP relocation onsite to a lower-infiltrating location possible?
    - Yes
    - No

- No

Can subgrade be modified to slow the rate of infiltration to less than 8 inches per hour?

- Yes
  - Select FTO Alternative No. 2
  - No infiltration practices allowed
  - Explore non-infiltration volume reduction practices
  - Provide soil boring or infiltration test results documenting high-infiltrating soils.

- No
Can subgrade be modified to slow the rate of infiltration to less than 8 inches per hour?

Yes

No

- Select FTO Alternative No. 2
- No infiltration practices allowed
- Explore non-infiltration volume reduction practices
- Provide soil boring or infiltration test results documenting high-infiltrating soils.
Are there adverse surface water hydrologic impacts from infiltration practices (e.g. impacting perched wetland)?

Yes

Can the BMP be relocated onsite to avoid adverse hydrologic impacts?

No
Can the BMP be relocated onsite to avoid adverse hydrologic impacts?

Yes

No

Would BMPs accommodating FTO Alternative #1 avoid adverse hydrologic impacts?

No

Yes

- Select FTO Alternative No. 1
- Maximize infiltration BMPs to treat more than 0.55 inch goal, if possible.
- Provide report documenting potential hydrologic impacts from infiltration on the site, prepared by registered engineer, hydrologist, or wetlands specialist.

Select FTO Alternative No. 2
- Maximize infiltration BMPs to treat up to the 0.55 inch goal, if possible.
- Explore non-infiltration volume reduction practices
- Provide report documenting potential hydrologic impacts from infiltration on the site, prepared by registered engineer, hydrologist, or wetlands specialist.
Linear and Redevelopment: MIDS Design Sequence Flow Chart

MIDS Work Group
April 19, 2013
linear/new

Does the project create one acre or more of new or fully reconstructed impervious surfaces? (2)

Yes

Is the project linear?

No

Project is exempt from MIDS Volume control requirements

Yes

Can a reasonable effort to acquire ROW to treat 1.1" from all new or fully reconstructed impervious be accomplished

No

Yes
DOW to treat 1.1" impervious be

No

Is FTO Alternative No. 1 feasible?

No

Is FTO Alternative No. 2 feasible?

Yes

Select Flexible Treatment Option (FTO) Alternative No. 1
Provide documentation of offsite runoff to project area
Provide documentation of lack of right-of-way.
Classifications

Nondescriptable about the Site

Is FTO Alternative No. 2 feasible?

Yes

- Select Flexible Treatment Option (FTO) Alternative No. 2
- Provide documentation of offsite runoff to project area
- Provide documentation of lack of right-of-way
Is FTO Alternative No. 2 feasible?

Yes

No

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