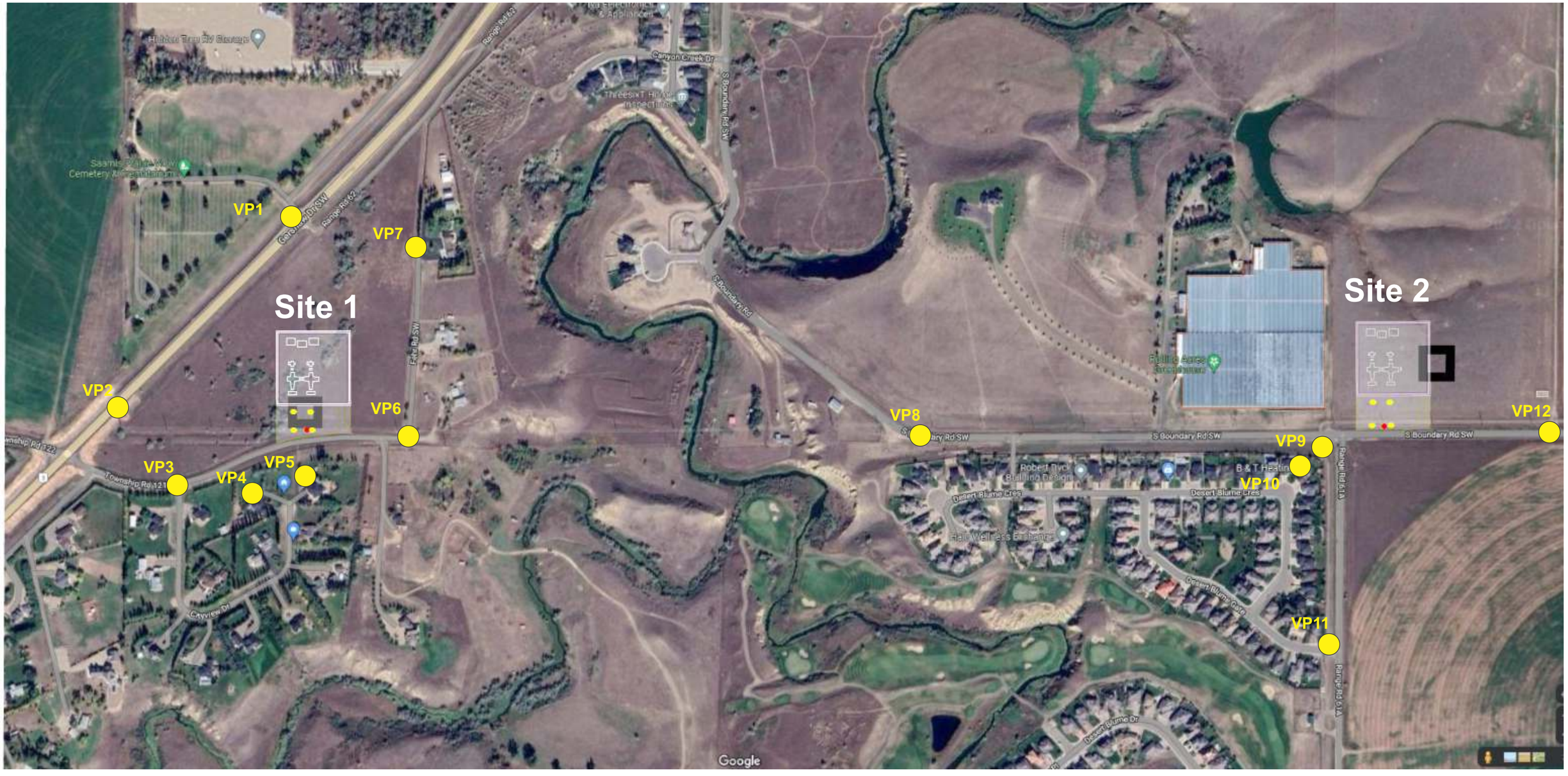
Visual Landscape Aesthetics Assessment of Site Alternatives for MHS-11



Visual Nature Studio Rendering Viewpoints

Expert Written Evidence Report of Dr. Kenneth B. Fairhurst, PhD, RPF - RDI Resource Design Inc
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Contents

Measurement of the Visual Landscape - Visual Impact Assessment Techniques

- Aesthetics is a set of principles concerned with the nature and appreciation of beauty, especially in art. Formal aesthetic qualities of many physical attributes can be easily measured and evaluated using quantitative or classification methods.

- Such attributes include vertical elements, horizontal elements, form, colour contrast, repetition, texture and pattern, scale, proportion, dominance, cumulative effect, direction, distance and movement, to name some.

- The metrics lead to a measure called Visual Absorption Capability - the ability for a proposed change to fit with the landscape.

- Metrics relating to “viewing duration” and “number of viewers” also contribute into formulas deriving visual sensitivity and ultimately provide input into the determination of visual aesthetic ratings to differentiate landforms and landscapes from one another.

- This formal, or expert, approach is universally accepted for measuring visual impacts in Canada, the USA, and in Great Britain and remains relatively unchanged and validated since the early 1960’s.

- Symbolic aesthetic qualities, such as those contributing to meaning and function, cannot be measured by quantitative methods, and generally rely on soliciting public opinion. However, formal aesthetic models generally include some generalized estimates, such as “level of concern”.

- These are the basic tenets employed to assess the substation proposal and its site alternatives.

Visual Simulation Techniques

- RDI constructed a planimetric geo-referenced plan to scale by importing the graphic provided by the proponent into ESRI GIS Pro, and referenced it to the boundaries of the gravel surface and fencing. This allowed RDI the establish to correct locations and footprints of the major components of the substation. Height measures were absent except for the A-frames and light masts.

- RDI obtained a 66kv substation 3-dimensional model from 3D Warehouse.

- A scaling procedure was applied to approximate the dimensions of the two sets of the substations. A third set was not simulated as it was declared to be only included in the design for assurance of potential accommodation, and would likely never be built according to the proponent.

- RDI imported the 3-d model into Visual Nature Studio (VNS). The VNS modelling provided for accurate positioning and scale based on terrain imported from Maps Canada, and allowed for a variety of viewpoints (12 in total).

- The Google Earth image was also imported and draped onto the model for reference. RDI added surface features such as grasslands, trees, houses, trails, and roads to emulate reality.

- The simulations are only approximations of reality. RDI was unable to portray key elements in either simulation method such as the A-frames and light masts, and was also unable to locate a more realistic 3-d model for the transmission poles. RDI used a simple t-pole with a 21m height and without lines to portray the transmission poles, and referenced the photography which exhibited the correct form of the poles.

- The results are presented on the following pages for each Site by related viewpoint.

Summary and Conclusions

Table 1 provides a comparative summary of Site 1 and 2 aesthetics. The findings reveal a greater aesthetic rating in Site 1 location, suggesting a favourance of Site 2 for the substation. Whichever choice is made, substantial and effective mitigation procedures are due in these residential settings.

The written text is brief. Instead, each picture (and each of the 12 visual simulations herein) "is worth a thousand words".... as they say.

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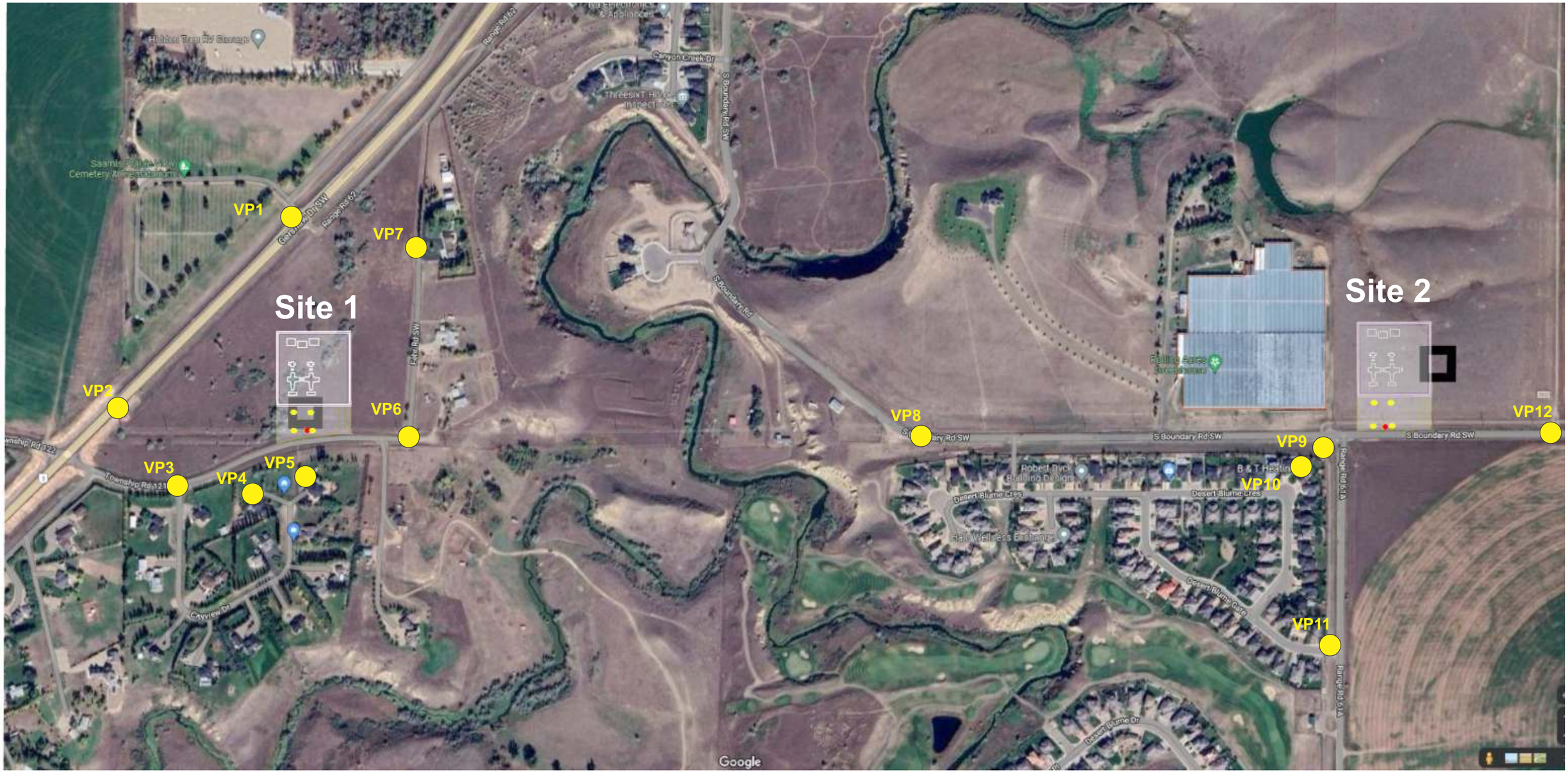
RDI Resource Design Inc
July 4, 2023

Table 1. RDI Comparative Visual Aesthetics Ratings Substation Site 1 vs Site 2				
Value	Site 1 Rating	Site 1 Descriptors	Site 2 Rating	Site 2 Descriptors
existing visual condition of site	3	natural appearing grassland and trees	2	natural low grassland, abandoned well-site
complexity of visual character	3	high	1	low
closest proximity of site (fence) to residential property	3	83m closest view	2	120m closest view
visual sensitivity of site from Highway 3	3	high	0	nil
viewing distance from Hwy 3 (visual benefit to travellers)	3	192m immed. foreground	0	nil - 1630m (middleground/obscured by greenhouse)
existing recreational amenities	3	many (access for neighbours)	1	few (trail at edge; no access to property)
recreational amenities loss if site built	3	high	1	low (trail unchanged)
visual amenities	3	many	1	few; coulees to north
absence of adjacent industrial visual impact	3	no influences	1	commercial greenhouse
mitigation opportunities berming, trees, lighting	2	moderate	2	moderate
mitigation opportunities - excavation potential	0	excavation unlikely	3	high - tie in to coulees/ avoid fill
in-place mitigation to obscure substation	1	shrubs	3	greenhouse and subdivision wall
basic visual impact in residential setting	3	very high	2	moderate
Comparative Rating Summation	33	Highly rated (maximum 39)	19	Moderately Rated (maximum 39)
3 = high; 2 = moderate; 1 = low; 0 = no influence				

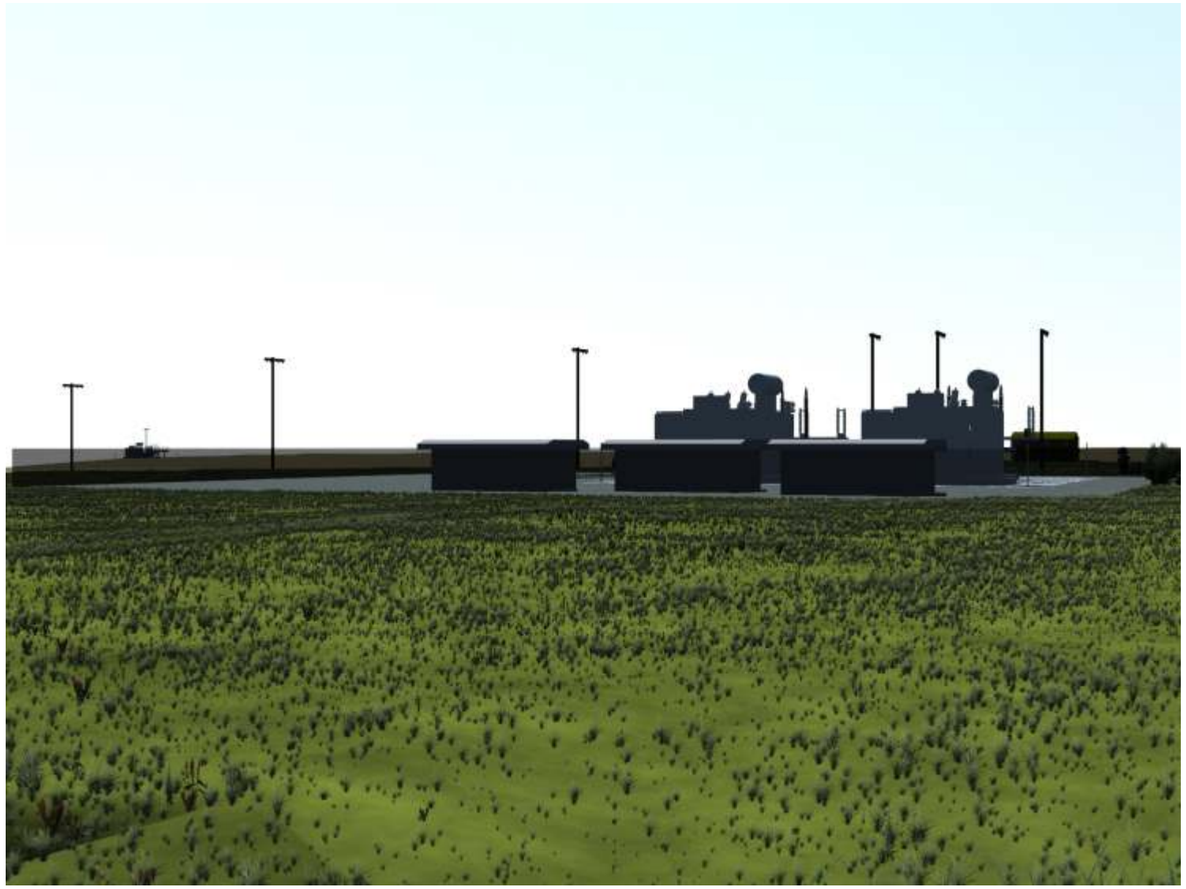


Visual Nature Studio Rendering Viewpoints

Cityview

Desert Bloom

MHS-11 Substation Site Plans at Exact Scale and Location



VP 1 - Highway 3 North - VNS Simulation 40 deg FOV; 48mm lens

VP 2 - Highway 3 South - VNS Simulation - 40 deg FOV; 48mm lens

Model missing A-frame, light masts.
Overall height of substation rendered 11m.
Fence is rendered at 3.6m.
See p.16 for actual transmission pole photos.
Transmission pole height portrayed is 21m

Site 1 VNS Simulations from Highway 3

VP3 - TWP Rd 121 @ Cityview Drive - VNS Simulation - 40 deg FOV; 48mm lens; 220m view dist.

VP4 - in Cityview West - VNS Simulation - 40 deg FOV; 48mm lens; 150m view dist.

Model missing A-frame, light masts.
Overall height of substation rendered 11m.
Fence is rendered at 3.6m.
See p.16 for actual transmission pole photos.
Transmission pole height portrayed is 21m

Site 1 VNS Simulations VP 3 Twp Rd 121 and VP 4 Cityview West

View is in closest proximity from a residential property towards either site.

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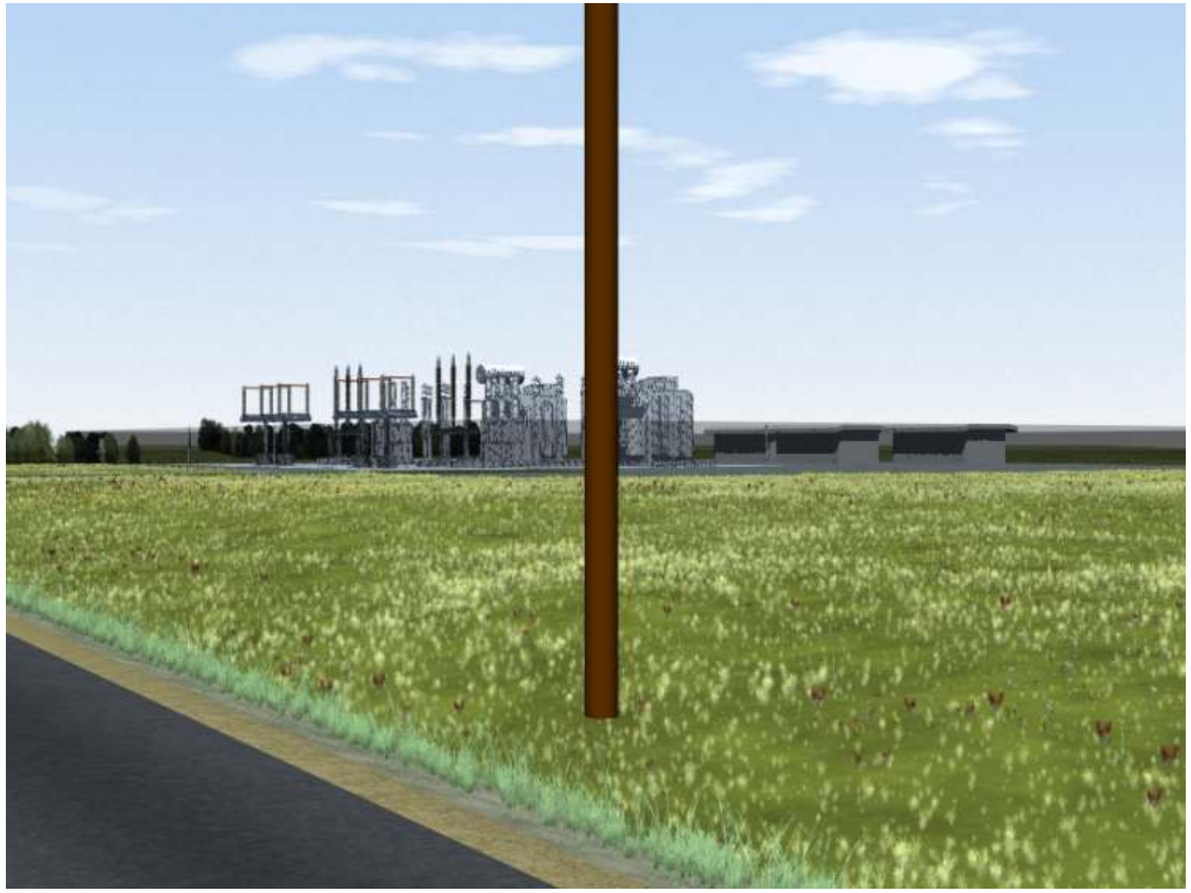
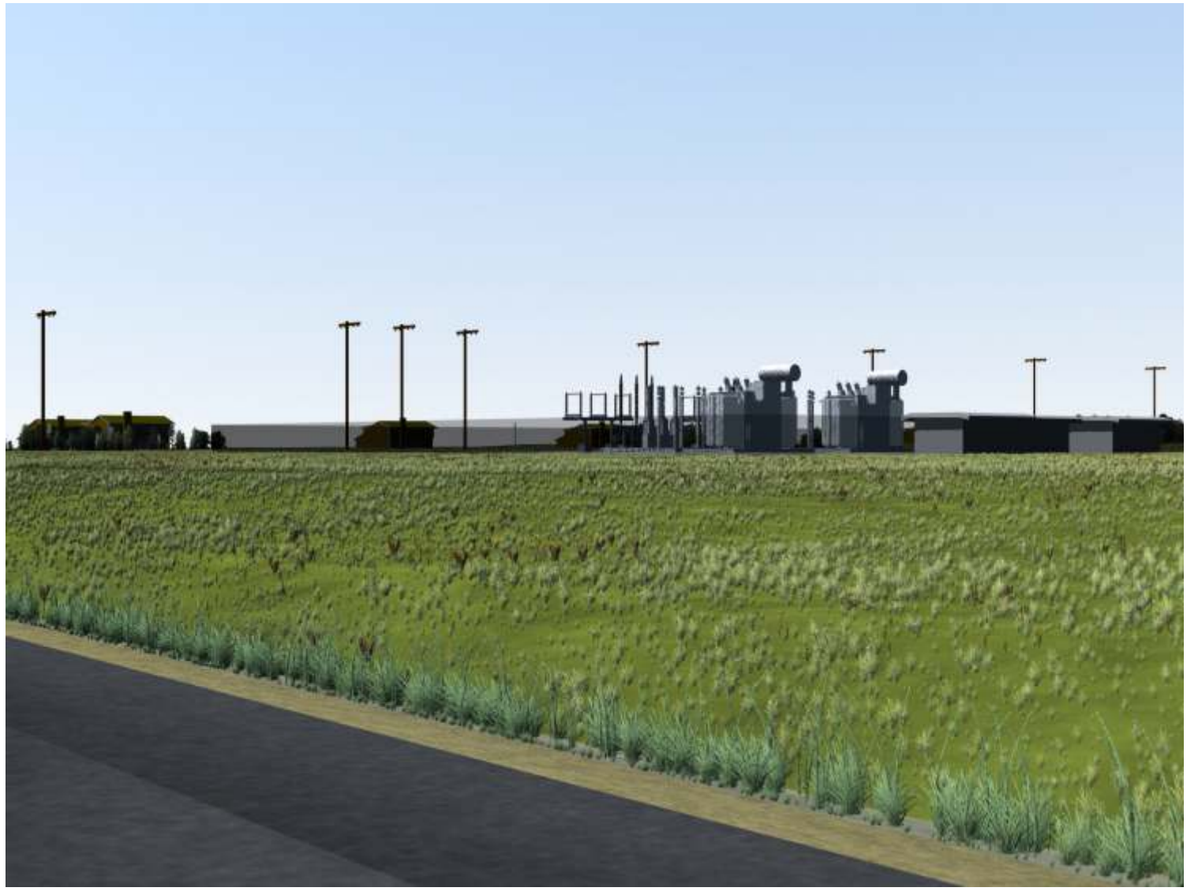
VP5 - In Cityview East (J. Jackson property view) - 40 deg FOV; 48mm lens; 96m view dist. (83m to fence)



VP6 - TWP Rd 121 @ Fehr Corner - 40 deg. FOV; 48mm lens; 140m view dist; 107m to fence.



VP7 - Upper Fehr Rd - 40 deg. FOV; 48mm lens; 200m view dist. (136m to fence)

Model missing A-frame, light masts.
Overall height of substation rendered 11m.
Fence is rendered at 3.6m.
See p.16 for actual transmission pole photos.
Transmission pole height portrayed is 21m

Site 1 VNS Simulations - VPs 6, 7

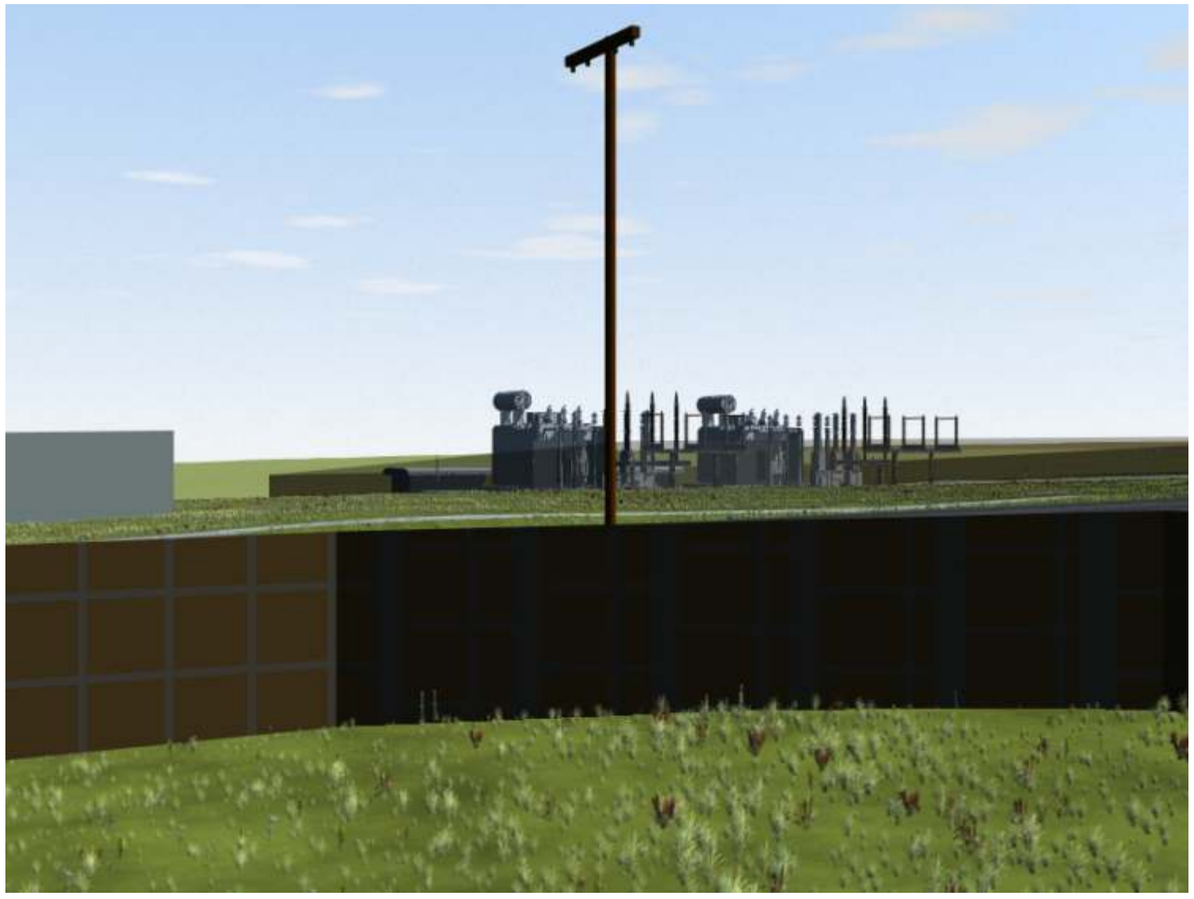
VP 8 - S. Boundary Rd West View, Desert Bloom on Right - 40 deg. FOV, 48mm lens; 630m to substation

VP 9 - S. Boundary Rd @ 61A 188m view dist, 75m to fence, greenhouse on left 40m; 60 deg FOV, 30mm lens

Model missing A-frame, light masts.
Overall height of substation rendered 11m.
Fence is rendered at 3.6m.
See p.16 for actual transmission pole photos.
Transmission pole height portrayed is 21m

Visual Nature Studio Rendering Viewpoints

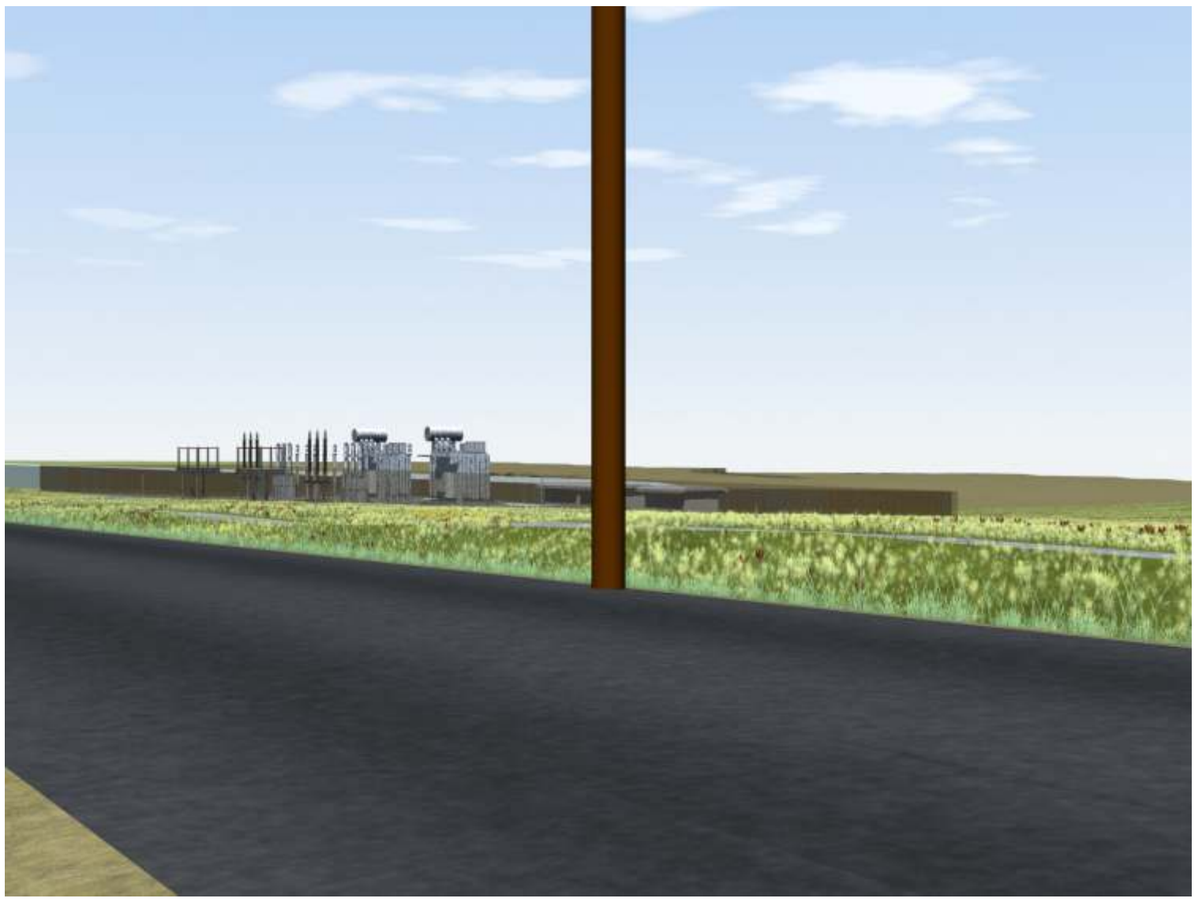
Site 2 VNS Simulations - VPs 8, 9



VP 10 - Inside Desert Bloom at Corner - second story house view above 2m wall, 145m view dist.
Greenhouse on Left 84m view dist. - 40 deg FOV, 48mm lens

Model missing A-frame, light masts.
Overall height of substation rendered 11m.
Fence is rendered at 3.6m.
See p.16 for actual transmission pole photos.
Transmission pole height portrayed is 21m.

VP 11 - Rge Rd 61A @ Desert Bloom Gate - 40mm lens, 50mm FOV - 386m (360m to fence) greenhouse 350m



VP 12 - S. Boundary Road - view from east - 40 deg. FOV. 48mm lens; 230m view dist, (175m to fence)

Model missing A-frame, light masts.
Overall height of substation rendered 11m.
Fence is rendered at 3.6m.
See p.16 for actual transmission pole photos.
Transmission pole height portrayed is 21m.

Site 2 VNS Simulations - VPs 11, 12